Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME VII.] NEW-YORK, APRIL 24, 1852. [NUMBER 32.

THE
Scientific American,
CIRCULATION 16,000.
PUBLISHED WEEKLY
At 128 Fulton street, N. Y., (Suu Buildings)
BY MUNN & COMPANY.

Hotchkiss & Co., Boston.
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RAIL-ROAD NEWS.

Ohio and Indiana Railroad.

This important link commences at Crestline, 78 miles south west from Cleveland, and runs to Fort Wayne, Ind., a distance of 131 miles. The amount of stock taken to January, 1852, is $711,600—being about one-half of the entire cost of the road independent of the right of way, which will no doubt be negotiated upon favorable terms. The region through which this road passes, though comparatively new, is increasing in population and wealth in a greater ratio than any other portion of Ohio, and Allen County, Indiana, has increased in population nearly 200 per cent. within the last 10 years. Fort Wayne, the terminus of the road, is a large thrifty place, and transacts yearly an immense amount of business. Considering the rapid growth of the country, the richness and fertility of its soil, we cannot see why this road should not become profitable upon its completion. That great civilizer—the iron horse—is sure to bring in its train the sturdy yeoman, and the industrious mechanic, and along the Ohio and Indiana Railroad, so easy of access from Buffalo and Cleveland, we shall find villages rapidly springing into active prosperity.

J. R. Stranghan, the chief engineer, presents a very elaborate and favorable report of the prospects of the road.

Railroad Obstructions

Certain petitioners in Boston have asked the Legislature for the removal of the Maine Railroad Depot from Haymarket Square to some locality west of Causeway street. The object of the petitioners appeared to be to have Causeway street freed from the passage of the cars on the road, and yet, says the Bee, by actual observation—parties employed by the city and the company—it was found that no train closed the street more than one minute and a half, while nearly all required but one minute and three-eighths.

Explosion of a Locomotive.

On Tuesday evening of last week, one of the locomotives on the Erie Railroad collapsed some tubes when the train was going West, and was near Chester. The fireman was killed and the engineer badly scalded. The engine was one of the best on the road, and it is supposed the engineer suffered the water to get too low. The train was moving slowly when the accident took place. This is the first accident of the kind which has occurred on that road, and we would fain hope it would be the last.

Injury to the Fruit.

The southern Ohio and Indiana papers report that most of the fruit—cherries, peaches, apples, and pears—which had escaped the extreme cold of the past winter, has been destroyed by recent frost. The Brookville (Indiana) Advertiser says:—"The loss is incalculable. Our present impression is that $500,000, or fifteen years of constant horticultural application will not bring back our orchards to where they were last summer."

IMPROVED ROTARY STONE-CUTTING MACHINE.--Fig. 1

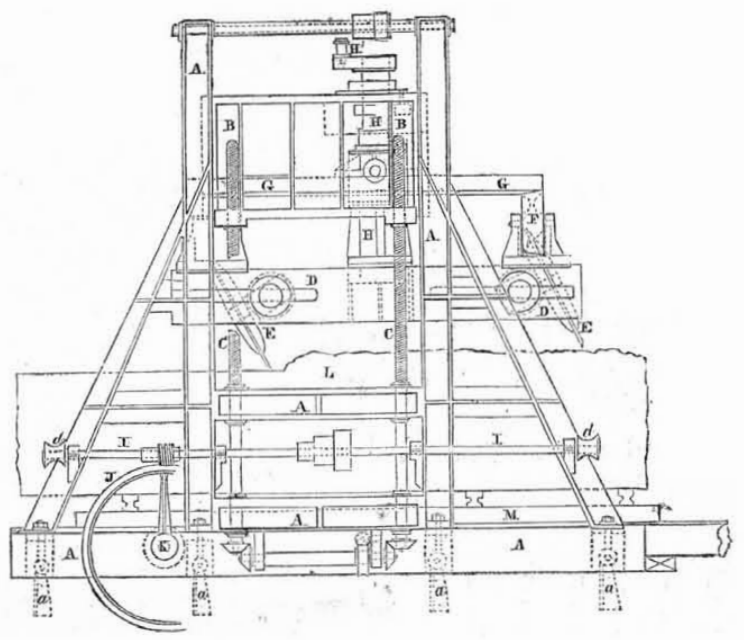
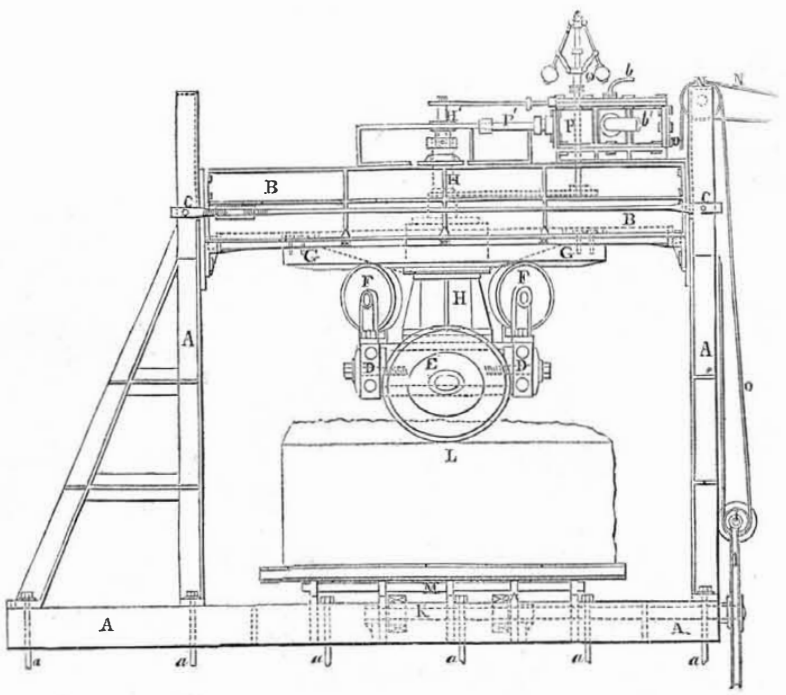


Figure 1 is a side elevation, and figure 2 is a front end view of the Rotary Stone-Dressing Machine, with steam engine combined, and the improvements of John W. Cochran, of Williamsburgh, L. I., for which a patent was granted on the 6th inst., and the claim of which is to be found on page 246; it has also been patented in England. Tha letters A represent the main frame for supporting the other parts: it is made strong, of any suitable material; B B is a frame composed of the cross piece extending across from one side to the other of the main frame, and permanently attached to a piece at each end extending downward, from said cross-piece, sufficiently to form bearings for the rock shaft. The frame, B B, is to slide up and down, guided at each end by upright posts of the main frame, by shoulders in the end piece of said sliding frame locking between the upright posts of the main frame. C C are screws working through bars or pieces permanently attached to the upright posts of the main frame, and into the sliding frame, by which the elevation of the sliding frame may be adjusted. G is a circular disc or guide table, against the under side of which revolve the friction or guide rollers, F F F F; this disc is attached to the rock shaft; D is the rotating cutter jaws, which carry the cutters. These jaws consist of two side arms, of such length as to revolve within the upright posts of the main frame, and are connected together at or near the centre. On the upper side of each end of these side arms is a friction or guide roller, F, mounted in suitable bearings attached to said jaws. These rollers revolve in contact with the under side of the guide table or circular disc, G. The cutter, E,

Figure 2.



must be so attached to the holder as to revolve when it passes over and cuts the stone, which may be done by the cutter being fixed on the end of a short shaft, with the other end of the shaft passing through the holder. The cutter holders are held in slots so as to be turned on their axes when required, so as to rise, to position the cutter to cut in the best manner, also to raise the cutter from the stone when dressed, or lower it when required. The cutters are circular ring discs, made of steel. The cutter jaws are hung upon the lower end of an upright shaft, which shaft passes up through the rock shaft and through the cross-piece of the sliding frame, B, in which it revolves, carrying with it the cutter jaws, there being a collar on the shaft, H, on each side of the rock shaft, to sustain it. The hole through the cross-piece of the sliding frame, B, in which the shaft, H, revolves, is oblong so as to admit of the shaft tumbling with the rock shaft. The shaft, H, projects a short distance through the cross-piece of the frame, B, and underneath the said shaft is firmly fixed a cam, which, acting in connection with a roller mounted on a stud in the cross-piece of the frame, gives the rocking motion to shaft H, the rocking shaft. disc G, cutter jaws, D, and cutters, E E. The said cam is so formed as not to give the shaft, H, a rocking motion, while the cutters are actually passing over the stone and cutting, or the surface would be dressed unevenly; the cam, therefore, is of such a form as to give the shaft, H, a rocking motion only to raise and carry the cutters over the undressed part of the stone at each revolution of the cutter jaws. On the upper end of the shaft, H, is the crank and crank pin, H′, by which the power is communicated to drive the machine. On the upper side of frame B is placed the steam cylinder, P, and the piston rod, P′, is attached to the crank, to give the required motion. The carriage, M, is fed with the stone by rack and pinion. The shaft, H, is hollow, and a column of water passes through it to keep the cutters cool while cutting, which is a most important advantage. The stone, L, is placed upon the carriage and moved under the cutters sufficiently fast to let the cutters act upon a new surface every cut. This feeding motion may be performed by belting, as exhibited by J I, or rack and pinion. One, two, or three cutters may be used. When using the rocking or tumbling motion, if cutters are placed in both end of the jaws, the cutters at one end should be elevated by turning their holders, so that the cutters at that end will not come in contact with the stone when the cutter jaws revolve, it being best to use the cutter or cutters in one end of the cutter jaws only, at one time. When dressing a very short stone, or when about finishing a long one, the cutters will pass round the undressed end of the stone and not require the rocking motion, in that case cutters in each end of the jaws may be brought into action to cut as required. A stone is placed upon the carriage in such a manner that one end of it will be in a position to be fed up to the cutter by the carriage; the cutter, or cutters, at one end of the jaws, is then put in the proper position to cut, which should be with the cutter brought towards the centre of motion of the rotating jaws, but which position will be found by experience to require variation according to the desired depth of cut, and which position is adjusted by turning the cutter holder. If cutters are also in the other end of the jaws, they should be so turned up as not to come in contact with the uncut part of the stone; the elevation of the cutter jaws carrying the cutter, must then be adjusted by raising or lowering the sliding frame, B, till the cutter is brought to a proper position to give the desired depth of cut in the stone, said sliding frame being raised or lowered by the screws, C C.

The Rotary Stone Cutting Machine, as usually constructed, has cutters which describe concave lines while acting on the stone; they strike the edge on the one side of the stone, and pass over the surface, and off at the edge on the other side of the stone. This action chips off pieces of the sides of the stone, and is therefore an evil. This improvement (while the machine is made, when desired, to work in the same way as that just mentioned) has a a combined arrangement of devices which obviates the said evil. The improvement consists in having the rotary cutters so operated, that the direction of the cutter over the surface of the stone, forms at each successive cut and leaves a corner edge of the undressed surface, and the cutter thus continuing to dress the stone on such convex surface or edge and towards the centre of its motion in such curved line until the side of the stone is completely dressed. The cutter is moved and cuts in a

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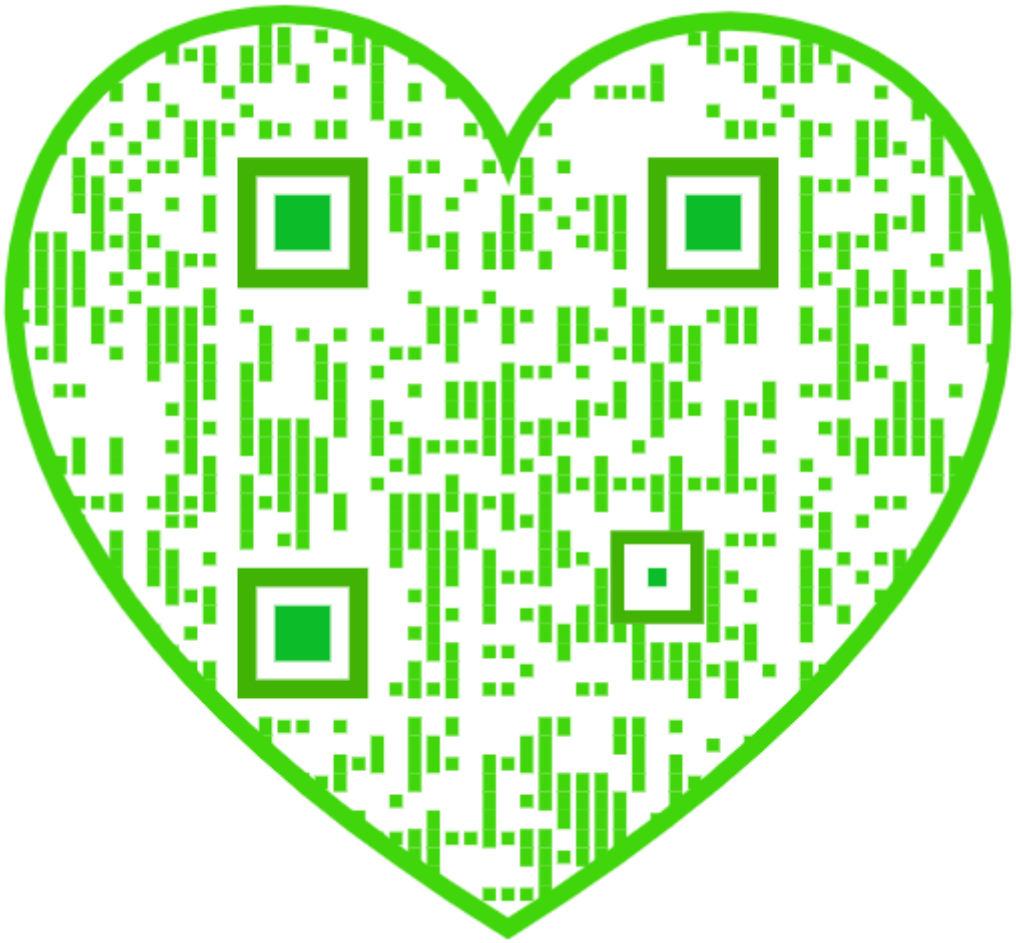

curved line over the stone in such manner and by such means that the convex side of such curved line is the projecting or boundary of the undressed portion of the surtace, and the concave side of such curved line so described by the cut of the cutter, is the edge of the dressed portion of the surface when it meets that part which is undressed. The cutter, by the improved arrangement, as it approaches and leaves the stone in such curved line as that described, attacks and leaves the surface in a manner and with conditions different from what has been done heretofore, so that it forms a plane and well dressed surface, and a more even and true arris (meeting edge) than can be done by any other rotary stone cutter. *a a* are the foundation bolts; the letters *b b'*, and Q, are the steam pipes and governer; *d d* are serging drums; O is a belt to drive the shaft, I.

Mr. Cochran is now erecting two large and powerful machines upon this plan for granite quarries in Maine, they are to dress large blocks 10 feet in width and 5 feet thick.—Each machine will weigh 35 tons. The rotary cutters are to be three feet in diameter, and will take a cut six inches deep and cut over 500 superficial feet in a day.

The improvement is a most important one, and reflects no small degree of credit upon its ingenious projector. An able company, we understand, have taken the business in hand and will carry it forward successfully.

Mr. Cochran's office is at No. 52 South street, N. Y., where all applications for rights, etc., should be made.

MISCELLANEOUS.

Discoveries in Africa.

At a meeting of the American Geographical Society held at the University, this city, on Tuesday evening, the 13th inst., Mr. Leavitt read a very interesting paper from the Rev. Mr. Livingston, a missionary in South Africa. The Rev. gentleman had made two excursions, in company with Capt. Oswald and another officer of the British Army, into the central part of the continent. Mr. Leavitt displayed a map to illustrate the paper. In 1820 a missionary had penetrated to Lattakoo, in lat. 27°; in 1822 another missionary went 200 miles further up; in 1830, Capt. Oswald and Mr. Murray went further up, to latitude 20° south. They found there a large river, (the Zonga), and a lake (the Ngami), never before known. Mr. Leavitt then read the letter of Mr. Livingston. They passed in their journey due north across the dry bed of the Zonga. Here they found numerous salt-pans or ponds. The Bushmen abound near the springs. They are a merry and honest race. For three days Mr. Leavitt was without water; travelling by night to avoid the heat. On the fourth day they struck a rhinoceros trail and followed it to the river Mataba, a small stream. They reached the Chobe on the next day. This is a deep and very crooked river. Here they found a famous old chief, Sabatone. His tribe is a very savage one. This old chief died while the travellers were there. They then went on to the Sesheke or Sikota on horseback, a distance of 100 miles. This is an immense stream; 300 to 500 yards across in the dryest season. Ten days up this river is the seat of the Barotsi, once the most powerful tribe in that region. The river has many tributaries and some rapids. In this region there are many large rivers; the country is flat, and in the rainy seasons is flooded for many miles from the streams. The people here are very black, very large, and strongly developed, but peaceful. They are more ingenious than the Cape people. The Baloc tribes melt large quantities of iron, and are very good smiths. There are some tribes who have the singular custom of knocking out the upper front teeth of both sexes, at the age of puberty; some of them knock out the teeth from both jaws. These tribes have a few domestic animals, where the tsetsi, (a sort of fly which kills cattle) does not abound. Natural food is everywhere abundant. The Portuguese have never been up the Sesheke to trade, and there is a fine chance for Christian traders up these great streams. One trader lately took down 11,000 lbs. of ivory, worth a dollar a pound on the Cape. Ostrich feathers, cattle, &c., are plenty. The people are all aware of the existence of a God, and seem to be informed in regard to future life, and rewards and punishments. There are many dialects along the Zambesi; but they have considerable analogy, and one might serve as a key to the whole. From the maps exhibited, we perceive that the Zambesi, (which is a very large river emptying into the Mozambique Channel by innumerable mouths in latitude 18° and 19° south) seems to divide into two great branches some 350 miles up; that these branches run west and then for several hundred miles north; that the branches are something like 200 miles apart, and that the country between is a rich delta, since junction streams constantly run from one branch to the other, thus forming large islands inhabited each by a different tribe; that 700 or 800 miles from the ocean the western branch of the Zambesi receives the Chobe, which is the largest river—the Ohio to the African Mississippi; that the sources of none of these rivers are as yet known; that south and west of the Chobe runs the Zonga, another very large river, neither end of which has been found, but it is supposed to empty into the Zambesi: that a hundred or two miles further south is the Limpoo River, also unexplored either way. It seems probable from these documents, that there is a large and fertile region, well watered, wooded, and peopled, on the spot generally set down as the lower part of a great desert, lying within a space bounded by longitude 20 and 35, and latitude 10 and 20. The Portuguese slave traders begin to penetrate there, not themselves, but by the black tribes who are in their employ. About two years ago some traders well supplied with English cloths, guns, &c., came into the Chobe region, but the people were not inclined to the business. The price of a boy was about eight or nine yards of calico or baize cloth. Mr. Livingston proposes to send his family home and go himself as a missionary to reside in the heart of the country.

The thanks of the Society were returned for the paper.

Recent Foreign Inventions.

Aime N. Derode, of Paris, has recently taken out a patent for the following method of uniting cast-iron with cast-iron and other metals:—

Mr. Derode's process of uniting metals to each other consists in the employment, in conjunction with ordinary heat, of a succession of electric or electro-galvanic shocks. The metals may be operated on either in the solid or partially liquid state. The metals are first scoured with acidulated water, the effects of which may be aided by heat and electric agency, then rubbed with wire brushes, placed in contact with each other in the position they are ultimately intended to occupy, have solder applied to the meeting parts, are heated by means of a clear fire in a suitable furnace, and, while the solder is melting, a rapid succession of electric shocks is caused to act on the two metals so as to combine with the solder, to produce perfect union of the two. The solder which the patentee prefers is composed of two parts yellow copper solder, one part brass, and one six-hundredth part nickel in powder; but other may be used, and these proportions may be varied. The joint product by the process described is stated to be so perfect as to be capable of resisting a force more than sufficient, in the case of two bars of iron united together by it, to fracture the bars.

Enammelling Cast-Iron Pipes.—Timothy Kenrick, of Edgbaston, Warwick, England, recently took out a patent for the following method of glazing the interior of cast-iron pipes:—

For this purpose the patentee employs two compositions—one to form the body, and the other the glazed surface. The body glaze is composed of 100 lbs. calcined flints, reduced to a fine powder; 75 lbs. borax, also in powder; these ingredients are fused into a mass, and, when cold, ground in water, dried, and mixed with potter's clay in proportion of 40 lbs. of the composition to 5 lbs. clay, and sufficient water to produce a paste of a creamy consistence. The glaze is to be poured into the tube, and the tube turned round so as to expose every part of its surface to be covered by the pasty mass. The second glaze is then applied, in a state of powder, over the whole interior surface, and the tube is then heated in a muffle until the glazes are melted. Should the whole of the interior, however, not have been properly covered with the surface glaze, it will be necessary to apply a further quantity of it, and to reheat the tube sufficiently to vitrify the additional quantity so applied. The surface glaze is composed of 100 lbs. Cornish stone, 117 lbs. borax, 35 lbs. soda ash, 35 lbs. saltpetre, 35 lbs. sifted slack lime, 13 lbs. white sand, and 50 lbs. white glass in powder. These several ingredients are calcined together, ground in water, and dried. To 45 lbs. of the mixture, in powder, is then added 1 lb. of soda ash, and they are mixed together in hot water, and, when dried, produce a powder which is used as above directed.

Great Discovery for Tobacco Smokers.

It will be seen by reference to our advertising columns that a new preparation of smoking tobacco has been offered in our market, the peculiar excellence of which consists in the extraction of the poisonous qualities, without affecting the fine flavor and aroma of the weed. The proprietors placed in our hands some time since a package of this tobacco for trial, and we can speak from experience when we say it is a most mild and delightful article. It takes away from the anti-tobacco men their chief argument, for it has no nicotine in it and can be used with safety as well as pleasure by persons whose nerves are affected by smoking. For ourselves, we intend never to be without this denicotinized tobacco, and trust that its proprietors will be liberally patronized by the public. It is for sale by Bennet & Beers.—[Richmond (Va.) Republican.

[When the nicotine is extracted will it be tobacco? Would wheat be wheat if all the starch were extracted? Nicotine gives tobacco its peculiar flavor. We should like to see what kind of tobacco this was with *all* the nicotine gone.

Iron Steamships for the Cunard Line.

A Liverpool correspondent of the New York Herald of Wednesday last week, makes the statement that the Cunard Company have sold their large ships Arabia and Persia, for some defect in their build, and that they are going to build an iron steamer longer than the Great Britain, which is to be of 1,500 horse-power, and to beat the world for speed. The fellow who wrote the letter was exceedingly ignorant of what he was writing about. No iron steamer is allowed by the British government to form part of the contract with any of the mail companies. The Oriental Company got orders to this effect more than a year ago, and one iron steamship, which they had about finished, was proscribed.

Ale in London.

Quite an excitement has been produced in London by the London Times asserting that the brewers sometimes put strychnine, a deadly poison, into their beer, to give it a strong bitter taste. The brewers have denied the charge and challenged investigation.

Death from Using Chloroform.

The New Haven Register states that Mrs. Emily Norton, wife of Mr. Hart Z. Norton, of Norwalk, having been afflicted for some years with a disease of the jaw and cheek, requiring the extraction of several diseased teeth, came to this city for the purpose of having the operation performed by her former medical attendant, Mr. Park. She had last year taken chloroform with happy effect, under his care, and now insisted upon having it administered preparatory to the operation.—She was allowed to inhale the chloroform, a very small quantity, for several minutes; almost while she was saying that she felt no effect from it, and was asking for its more free administration, the doctor noticed the pulse suddenly to fail. Within three or four minutes from the time this change was noticed, all signs of life were gone, and the most vigorous efforts to resuscitate the woman, proved unavailing. The quantity of chloroform used, was much less than is commonly administered in surgical operations; and the operator is regarded as a skillful, judicious and prudent physician.

Challenge to American Shipbuilders.

We understand that Mr. Mare, of Blackwall, has invited the commodore of the New York Yankee Club, or any gentleman in America, to compete with a vessel which he will construct, in a contest similar to that in which the America was successful last year, to come off at Cowes, in next August or September; the conditions can be referred to umpires chosen by the respective parties. Mr. Mare stakes £100 on the result. The American yachtmen must be aware that the America, built almost entirely for speed, came to England to contend with yachts already constructed to combine as much speed as would be consistent with comfort, hitherto a *sine qua non* in British yachts, and Mr. Mare, in the same spirit of courtesy and generous rivalry, as characterizes the proceedings at Cowes on the late occasion, invites the Americans to the trial; and although Mr. Mare by no means presumes that the British yacht will be successful, yet ventures to think a better test of the respective vessels will be obtained when they are both built for the same purpose. —[United Service Journal.

Mr. Mare must be an extraordinary polished credulous, philanthropic, and philosophic gentleman. Here he invites any American to come over to England and try a race for $500. Will he pay the expenses over and back of any American yacht that will take up the challenge? if so, he will find a customer. America has gone over to England once on an invitation, and beat all the yachts there; it is now for Uncle John to come here and do the same thing with us—f he can; this is fair, Uncle John is a lover of fair play and is no coward, we believe, but the challange of Mr. Mare looks very much like the defiant clarion of the barn-yard rooster. Come over here this time Mr. Mare, it is your turn now.

Great Steamship Accident.

The last news from Europe, per the Arctic contains the account of the loss of the Birkenhead, steamship, on the south coast of Africa. She was bound to the Cape of Good Hope with soldiers. The sky was clear and the sea was smooth. She struck upon a reef of sunken rocks when going at the rate of nine knots per hour. In twenty minutes a few floating spars were all that appeared of this fine vessel. Of 638 persons who were aboard, 454 were lost. The captain, like many other too confident men, was desirous of making a short passage, and hugged the shore too closely. It is a sad fact, that danger begets recklessness in those who have been accustomed to brave it with success.

Wheeling Bridge.—Explosions.

We had supposed that Chief Justice Taney was the only dissenter from the decision of the U. S. Supreme Court in reference to the Wheeling Bridge Case; but there is another dissenting judge also, viz., Judge Daniel. He has published his opinion; he takes about the same view of the subject that Justice Taney does. The judges of the U. S. Supreme Court, we believe, have exceeded their powers in rendering such a decision, and we can thus see how any body may commit errors. The chief argument against the bridge was, that long chimneys increased the speed of steamboats, and the bridge interfered with long chimneys. We hope Congress will look into this point; we have had enough, God knows, of the nuisance of western steamboats within the past three weeks. Let the West go in for railroads, and render the use of explosive steamboats obsolete.

The ponderous machine which has been built at South Boston, Mass., for the purpose of tunneling Hoosac Mountain, will be taken to Greenfield, near where operations are to commence, the latter part of this week. The machine, or borer, as it is called, weighs ninety tons.

Prince Schwartzenburg, the Austrian Prime Minister, is dead. He died from a stroke of apoplexy. He was the bitter hater of Hungary, and the persecutor of the Protestant missionaries in that country. Kossuth has one enemy less now, but there are plenty more of such men in Austria.

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(For the Scientific American.)

Geology.

If the hypothesis advocated in the article on the Nebular Hypothesis, in last week's issue, be true, it is evident that the earth's surface was once destitute of mountains, because the centrifugal force generated by the rotation on its axis, being greatest at the equator and decreasing towards the poles, where it vanishes, would arrange its fluid matter into a spherical, or rather spheroidal, form, without producing eminences; and, in this condition, the water now on it would cover its surface everywhere, and there could be no vegetation except aquatic plants, and no animated beings that require pure atmospheric air to sustain life. We find, accordingly, that the first living beings inhabiting the earth were such as flourish only in salt water, whose fossil remains are found in every country, on the highest mountains, and in the lowest plains, proving that every part of the earth was once covered with water during a period long enough for these remains to accumulate by generation in beds many feet thick. During this geological period, while the lowest of earth's strata was being formed, no remains of the higher order of animated beings nor of any vertebrated animals, were ever found.

Omitting minor changes, for brevity sake, we come next to the stone coal formations, which are evidently of vegetable origin, and to the time when those monstrous animals, the Saurian tribes, the mammoth, the megatherium, etc., inhabited our globe. It seems that at this time vegetation flourished in its greatest vigor to supply materials for the immense coal beds which extend over so large a portion of the earth, and to furnish food for those numerous races of gigantic beings which can no longer exist on any part of our globe. Hence it is manifest that before this time a part of the earth's surface had become dry land; and here we must inquire how these changes were brought about, for if there were then wind blowing over the earth's surface it must have become considerably firm to support this exuberant vegetation.

I was once in a furnace where cannon balls were cast, and obtained leave to spoil one;—with a hammer I knocked a hole in the already hardened shell, and poured out the interior still fluid metal. It then appeared that the ball had cooled irregularly, for the interior surface of the shell exhibited eminences and ridges—in one place there was a beautiful grotto work. Now suppose this globe on which we live radiated its heat irregularly, as the cannon ball did, and it requires no great sagacity to perceive that there would be hills, mountains, caves, valleys, lakes, rivers, and natural bridges, just as they are formed on various parts of the earth; for, first, if the earth did radiate its heat irregularly, those regions which lost their heat soonest would stand firm, while the hotter, and consequently softer parts would sink; for it is well known that every thing decreases in bulk in proportion as it loses heat. The cooler, and consequently firmer, parts would therefore become hills and mountains, while the hotter and softer parts would sink down and constitute vallies, into the lowest of which the water would run and form oceans, seas, and lakes, leaving the dry parts suitably prepared for luxuriant vegetation. Second, if, in any particular place, the surface were condensed into a stratum of rock while the softer substratum subsided under the middle of it in consequence of the earth's contraction, a cave would be formed in that place; and, if two separate strata overlying each other existed, the lower one might sink and the cavern might have both a rock roof and floor. In this way caves of vast extent might receive rivers, which might re-appear at a great distance; or a river might break into a cave and disappear till it was filled, and then resume its former channel, as it is said the Rio Grande once did. Natural history is full of confirmatory instances. Nippe Nose Valley, in Pennsylvania, 13 miles long, and 8 or 9 broad, is surrounded by a high mountain, except a narrow gap where the water broke through into the Susquehanna. The surface of the valley rises from the mountain towards its centre in the form of a longitudinal segment of an ellipsoid, and the two streams rising at the west end run along the mountains, leaving the central part destitute of water. A number of years ago, a man tried to dig a well here, and while striking the scaly limestone, his sledge fell with the bottom into an abyss, leaving him scarcely room to stand; a putrid pool now marks the place. With very little variation of words, part of the above description would account for the existence of the natural bridges in Virginia, Alabama, and California.

Third, in mountainous regions the strata of rocks dip down with the sides of the hills and mountains, just as they would, if broken by the subsiding of the vallies; while, in extensive planes, such as there are along the Illinois canal, the limestone strata lie horizontal, disappearing underneath as the surface rises, and exhibiting seams and all appearances of gradual formation. It is obvious that, if the earth were level when the strata were formed, they must break when parts subsided.

Fourth, it is a well established fact that the interior of our globe, at no great depth, is yet in a fluid state, for the heat increases one degree of Fahrenheit's thermometer for about every eighty-seven feet we penetrate below its surface; and the earth must consequently still decrease in size in proportion as its heat is radiated. And that its volume is diminishing is proved by the fact that, with trifling exceptions on some parts of the western coast of Europe, the waters of oceans, seas, and lakes are continually subsiding and retiring from the shores of both the eastern and the western continents. Lyell says time was when the Gulf of Mexico covered the lower part of the Mississippi valley up to the mouth of the Ohio river, and retired gradually, as it still continues to do. Hence it may be inferred that the bottoms of all large collections of water, which are of course the least condensed parts of the earth's surface, are gradually subsiding and their basins becoming continually deeper.

Fifth, it is also worthy of observation that the remains of those huge animals, which naturalists say could not exist in a cold and variable climate, are not found in the torrid, but in the temperate and even on the border of the frigid zone. The fact that our climate is no longer suitable to support life on so magnificent a scale, and that such exuberant vegetation as was required to furnish materials for the immense coal beds, which also exist principally in the temperate zones, can be produced only in a warm and genial climate, proves beyond a doubt that the temperature of the earth's surface was once much higher than it now is. And the same causes which reduced its temperature being still active, it is but natural to suppose that changes will gradually, in the course of many ages, banish all the animated beings now existing on it from the earth, and render it as unfit to sustain them as our moon now apparently is; but these changes are so slow that they are imperceptible from one century to another; and as man can accommodate himself to almost any climate, his race will probably be the last that will disappear.

Sixth, this theory is the only one that can be made to account for the phenomena, earthquakes and volcanoes, though the learned naturalists laugh at it. Suppose the earth contracts gradually, as already indicated, and opens a fissure in the vicinity of water, as in the formation of a cave, the water runs in among the melted lava in her bosom and is converted into steam, which throws up the fiery matter, rocks and stones loosened by the concussion, boils over the cauldron and runs down the mountain, and we have all the appearances of an eruption; or, if the quantity of steam is not sufficient to burst the barrier, we have an earthquake, light or great in proportion to the quantity of steam formed and the space over which it is diffused, and extensive or limited in proportion to the extent of its penetration. But this is a cooling process, and the steam, carrying off an immense quantity of heat, chills the melted lava, and perhaps otherwise stops up the aperture where the water entered, or the supply be exhausted, and an interregnum may ensue until condensations opens another vent. Volcanoes and earthquakes are generally found in contiguous regions; and the former may throw up conican peaks, but can never form a mountain chain. Another evidence that the earth contracts, and sometimes leaves the superincumbent mass unsupported, is the sinking of low places of ground when shaken by earthquakes, as at Lisbon; but I remember not a single instance of a mountain being precipitated into an abyss underneath it, except a gap in one in Tennessee

Seventh, from the above reasoning and the facts stated, it appears that the creation of all living beings was not simultaneous, but progressive; for human remains are not found during the period of the shell and coal formations; and so seldom afterwards that some geologists have denied their existence; but there is an account of them in the Edinburgh Philosophical Journal, Vol. I., p. 422; hence we may infer that, as the earth in its progressive changes produced suitable sustenance for a certain race of beings, that race was placed upon it; and when it became unfit, it was removed to make room for another race suited to existing conditions; until it became a suitable dwelling place for man, who was constituted lord of all the rest.

Eighth, every person knows that the zoophites have built coral reefs between twenty-eight degrees north and south from the equator, hundreds of miles in length, and high enough to reach to the surface of the water. Now, these insects cannot exist out of salt water; but coral reefs are found on both continents and far removed from the ocean. There is one running through England, extensive ones in Indiana, Kentucky, Illinois, Iowa, Vermont, and in Mellville Island, within the polar circle. Since zoophites cannot work in water colder than sixty-six degrees, this proves not only that the countries just named were once covered by the briny deep, but also that in a part, at least, of the frigid zone, the temperature never fell lower than 66°, which is near our ordinary summer heat. But this article is already too long I fear.

H. R. Schetterly.

Ann Arbor, Mich.

Woodworth's and Parker's Renewal of Patents.

About three or four years ago I heard a gentleman who had an interest in the patent of Woodworth's machine, say that $75,000 had been paid for the right, and seventy-five thousand in defending it; and another gentleman that he had bought the right for a limited territory for $250, and had to pay $1100 for the renewed right.

In your remarks on the application for a renewal of the patent for the Parker Waterwheel, you say, "we believe that Mr. Parker has never made a great deal out of his patent." My experience and information lead me to a different conclusion. In Lycoming Co., Pa., his agents went around and demanded from $20 to $50 on each saw-mill, using re-action wheels, and summoned the owners to go to the county town and pay or be sued. They went and consulted together, and agreed to meet again; but as information had been obtained before the next meeting that, in a trial in Western New York, it had been proven that the wheels they used and that were claimed as infringements, had been previously invented and used, and a verdict given for the defendant, it was agreed not to pay, and about twenty-five of them were sued, but no trial brought on.

Some months after this, notices were sent around that if they would come and pay the original demand the plaintiff would pay the cost, or else they would be sued at Pittsburg, near two hundred miles distant, a branch of the U. S. Court being held in their own county, and on this the greater part paid, but the most active man in getting the necessary information still refused, but a notice for an injunction, returnable at Pittsburg, was served on him, which brought him to a compromise rather than incur such heavy expenses as must fall on him, standing almost alone, even if successful.

In another county in Pennsylvania, and two counties in New York, I have reliable information that mill owners generally paid their demands.

The policy of Parker seems to have been to let all patentees of re-action wheels go on unmolested and introduce their wheels, with the appendages that he claimed as his invention, and after they had spread them all over the United States, then send round his agents and collect for infringements, and I have no doubt but he has realized a large fortune from this course. He may call it fair dealing, but I do not.

To me the applications to Congress for both renewals seem to be presumptious, and in conflict with the letter, spirit, and intention of our Patent Laws, and the true policy thereof.

I have been informed by a Member of Congress that Parker's position is understood, and that there is not the least chance for his success. I trust that this information will be joyful tidings to many of your numerous readers; and as for the Woodworth machine, I should think the prospect could not be much better, or at least it ought not to be.

J. R. Lippincott.

Freehold, N. J.

(For the Scientific American.)

The Municipal Telegraph---Who was the First Inventor.

On pages 219 and 227, Volume 7, Scientific American, there is a description of the Municipal Telegraph, which demands some attention from me, as I claim to be the original, and have thought myself the *first* inventor. On page 516, Vol. 6, Scientific American, can be found a brief description of an "Electro Magnetic Fire Alarm,"—another name, truly, but the same combination of essential parts. And here I take occasion to say, that I never heard nor read a description of any such combination as my own, until some six months, perhaps, *after* the publication of that article. In 1850, a model of my invention was publicly exhibited in Eaton, and is yet in existence, so far as I know. At the same time I exhibited a drawing and description to a number of scientific gentlemen in Cincinnati, Ohio; shortly after that I applied the "Alarm" to my own house, near Eaton. And on the 29th day of January, 1851, I applied for a patent. When I first conceived the "general principles," I cannot say. There is a portion of my invention that has not been adopted by Messrs. Channing and Farmer; it has never yet been described in any printed publication that I am aware of, it is the mode of constructing the "afferent" or sensitive circuit, that dispenses with the aid of a policeman in giving an "alarm," either of fire or burglary; he, with others, receives the intelligence from the alarm. The sensitive circuit is "broken, lapped, and bound with some combustible material," at certain points of danger, or where fire may exist; or the connection may be made with a metallic solder that melts at a low degree of heat; this is done that the circuit may be easily broken by the action of fire.

I am ambitious of an honorable fame (I say it frankly), but I would not appropriate the hard studies and honest achievements of another to that end; if I cannot honestly and honorably accomplish that, which would entitle me to the good esteem of honest and honorable men, I would desire to remain as I am—unnoticed and unknown; and, if Messrs. Channing and Farmer are the first inventors of the "Alarm," I will cheerfully relinquish my claim to that honor. Henry Van Ausdall.

Eaton, Ohio.

Illuminating Light Houses.

Dr. Gesner, of Halifax, N. S., as has been mentioned in our columns in Vol. 6, discovered, in his geological surveys in New Brunswick, valuable deposits of asphaltum, which, by an improved apparatus and mode of treating it which we witnessed in this city, makes a most beautiful illuminating gas. He has applied it to the purpose of making a brilliant light in lighthouses upon the coast. The lighthouse at Meagher's Beach, Nova Scotia, has been placed by government under his charge. He has illuminated it at a charge of $100 per annum, making a saving of $250 per annum. The Dr. proposes to furnish the other houses in the same manner. He also states that he can erect lights along the shore, without expensive houses, by raising poles and placing the lights upon them.

The City of Liverpool.

This English city increases about as fast as some of our American ones. In 1841 it had a population of 260,416, in 1851 it had a population 384,263; an increase of 123,847 in ten years. Liverpool is a great city, and at present, we believe, is the largest shipping port in the world.

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NEW INVENTIONS.

Railroad Track Cleaner.

Simeon Minkler, of Chazy, Clinton Co., N. Y., has taken measures to secure a patent for a useful apparatus for removing obstructions from railroads, and preventing cars from being thrown off the track. This invention is intended to be attached to each side of a locomotive engine, car, or any other carriage on a railroad. It consists of a pair of irons, that may be termed a "grapple," and which, when the two jaws of which it is formed are closed, embrace the flanges of the rail as closely as it is possible without producing friction. The two jaws of the grapple are jointed to a strong limb of iron, which descends from the frame of the engine or truck, or other carriage, and will always close by their own weight, being kept so by a loose collar which drops over their joints. They are made of such a form as is best calculated to throw aside any obstruction, and are always intended to be closed upon the rail, while the train is in motion, but are furnished with chains which are within the control of the brakeman or other person on the engine or car, and they can be freed from the rail when desired.

Improvement in Fire Engines.

Alfred Carson, Chief Engineer of our Fire Department, has taken measures to secure a patent for a valuable improvement in the working parts of Fire Engines; it consists in an improved combination for working the plungers of the pumps. One method of working the plungers is by pulley and chains—and this is held by good judges to be the best mode, but the chains and centre pulley, as now applied on engines, tend to drag the pump rods out of line. The improvement is designed to obviate this difficulty, and to insure the true rectilinear motion of the pump rods, without employing connecting rods and guides, or other devices to keep them in line. The chains are made to work in guide slots in the rods, and pull upon them in the direct line of their motion. The improvement, in a great measure, also prevents the rods being thrown out of line by accidental causes.

Improved File Cutting Machine.

M. H. Fisher, of Derby, Conn., has taken measures to secure a patent for a valuable improvement in machinery for cutting files. The nature of this improvement consists in attaching the cutter stock below the centre of the shaft which has a reciprocating circular motion, and which brings the cutter down upon the "blank" before being struck by the hammer. The object of thus attaching the stock to the shaft, is to prevent the chisel from striking in the groove previously made, when the machine is driven with a rapid motion, and thus remove one of the greatest difficulties to the successful operation of cutting files by machinery.

Improved Boiler Front.

James Slater, of Macon, Bibb Co., Ga., has taken measures to secure a patent for an improved front for steam boilers. The nature of the improvement consists in having water passages on the under side of the front plate, said passages being either cast in one piece with the front plate, or attached to it by bolts or rivets; the water is introduced into the boiler by the lowest passage. These water passages cause the water to enter the boiler in a heated state and prevent the front plate from being burned; the arrangement of the passages enables all the sediment to be blown off by a blow-off cock, and thus sedimentary matter is prevented from collecting in the boiler.

Port Monaies.

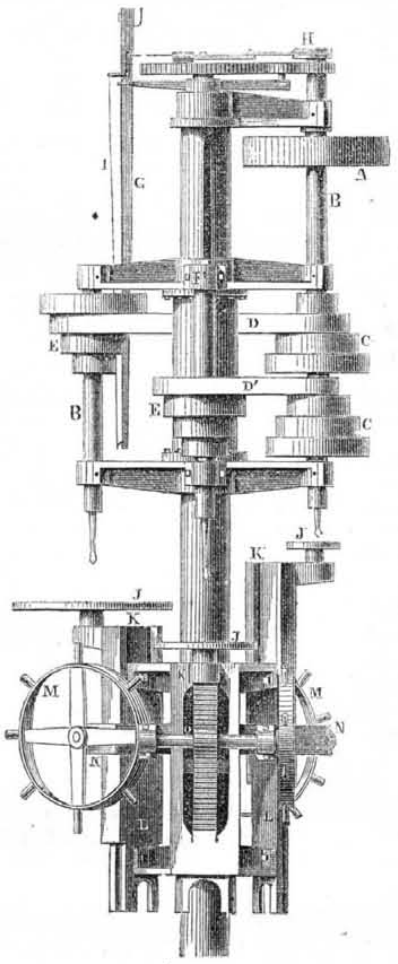
Benjamin S. Stedman, of West Meriden, Ct., has invented a machine for making "Port-Monaies," and such handy pocket-money keeping articles, which will make five times the number of such articles, and make them better, in the same time, than is now done by any of the common methods now employed. He has taken measures to secure a patent.

Stone Cutting Machine.

We have examined the patent stone cutting machine of William Ayres, which is different from any that has yet appeared in our columns. We shall publish an engraving of it next week.

Iron Drill.

This engraving is an elevation of a very convenient and useful iron drill, which is manufactured at Seneca Falls, N. Y., by Messrs. Silsby, Race & Holly. A is the driving pulley; B is the driving shaft; C C are cone pulleys on

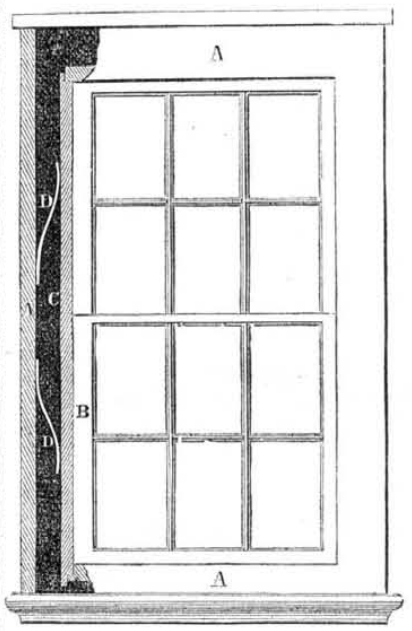


a hollow shaft which plays up and down on the driving shaft, as desired; the driving shaft has a groove cut into it, with a feather inside of the hollow shaft to prevent it turning. The other two cones, E E, are driven by belts. The large pinion at the top of the column is fitted to a screw shaft which runs down the centre of the said column, and is attached to a nut secured to the upper arms at F. The upper and lower arms are bolted to a hollow shaft, which is fitted over the main column, allowing it to play up and down the same, and is kept from turning by a slot in the column. The three small pinions at the top (one not seen), are so arranged as to reverse the motion by use of the lever, G. On the top of the driving shaft is an eccentric, H, which governs the feed of the two drills on the stocks of E E; it is put in operation by drawing down the small rod, I. The three face plates, J J J are attached to slides that play in grooves on the stationary plates, which are fastened to arms that are fitted to play around the main column, so that any part of a face plate can be used under a drill, or the drill can be used between the face plates. All the face plates can be operated separately by the hand wheels.

More information may be obtained by addressing the parties by letter as above.

Improvement in Windows.

The accompanying engraving is a front view showing the binding springs of the improvement in windows invented by Samuel D. Nims, of the State of Massachusetts, and secured by patent on the 23rd of last December. The window frame and sashes are constructed in the usual manner. A is the window frame. The window sash bear against the frame in the usual way. One side of the frame is firm, the other side has a recess, C, in it. Into this recess is fitted the flat



springs, D D. The usual strip is set at the side to cover up this recess, and the side, B, of the sash presses against this strip. The springs, D D, press against this strip, inside, and the window sash, B, of the lower half of the window press upon it outside. The figure shows how this strip is set in the frame.—When the window is raised, the elasticity of the spring, D, acting on the strip, retains the window at any part to which it may be raised. This is a substitute for rope, weight, and pulleys; but more so to do away with the catches and eccentrics which have been somewhat extensively introduced as cheap substitutes for the balance window. It will be observed that this is a very simple, cheap, and durable window fastener.

Information may be obtained about rights, etc, by letter addressed to E. Valentine, Palmer, Mass.

IMPROVED SHEARS.---Fig. 1.

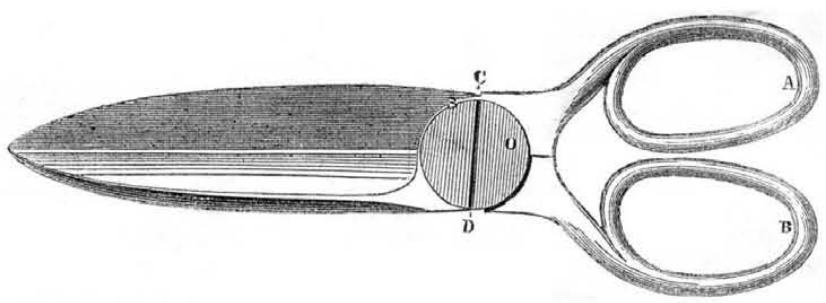
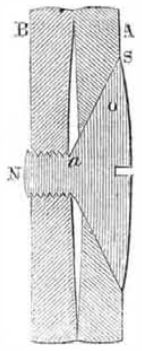


Figure 1 is a plan view of a pair of the improved shears, and figure 2 is a section taken through the pivot. The inventor is J. C. Symmes, of West Troy, N.Y., and a patent was granted for the improvement on the 27th of last January; the claim will be found on page 166 this volume of the Scientific American. The invention relates to an improvement in the pivot by which the edges are drawn together sideways in cutting, and all inconvenience arising from the looseness of the pivot in ordinary shears, is effectually remedied. The longitudinal form of the edges of the blades, make them meet at the same angle throughout the whole of their length, and thus produce a smooth even cut for any length.

A B are the two limbs of the shears; N O is the pivot part; N is the screw of the pivot, which is screwed into the limb, B; the part, O fits in A. This part is in the form of the frustum of a cone, and the hole to receive it is of a corresponding form. The cutting edges of the blades are curved in the form of a logarithmic spiral, the axis of the pivot, O, being the eye, of the spiral.

The operation of the shears in cutting is as follows:—When any substance is placed between the edges and power is applied to the handles, so as to draw them together, the pressure is received on the side, S, of the part, O, of the pivot, which acts as a wedge and draws the faces and edges of the blades towards each other. This effect must be produced, no matter how loose the pivot may be fitted, or how it may wear, provided there is room at the neck, *a* (fig. 2), of the pivot, or at the smaller end of the opening in the limb, A, to allow it to slide. If the two edges be correctly set

Fig. 2.



out in the logarithmic spiral form—the curve, diverging in opposite directions, and the pivot is at the eye of the spirals, the edges have a common radius vector to the point where the edges meet, wherever it is, and hence must meet at a constant angle throughout the whole of their length.

These shears are excellent for cutting iron tin, pasteboard, or cloth. The harder the substance the better they act. They are not liable to get out of order by wear, and the improvement is certainly a very excellent one.

More information may be obtained by letter addressed to the patentee at West Troy.

The Fire Annihilator Gun.

H. Strait, of Covington, Ky., has sent us a description of his Fire Gun, which was patented a few weeks since, and the claim of which will be found on page 198, this volume of the Scientific American. It is intended for extinguishing fires by shooting them down with water. The water of this Fire-gun is confined in the barrel by a cap. When it is fired, the cap is either burst, and lets the water through, or is blown away with it. The cap is a circular disc of water-proof cloth, leather, or any other suitable substance. The gun is made in a very ingenious manner, so as to be light and yet carry a considerable quantity of water. The powder is introduced either loose or in water-proof cartridges; then water-proof wadding is introduced so as to keep the water from the powder, and either above or below this is placed a disc of metal, such as tin foil, to form a kind of piston head for the powder to force out the water. The water is poured in until the barrel is nearly full, and then a cap is laid smoothly over it, which cap is kept tight by a guard and flange.

Mr. Strait says, "a park of these in city service, would form a fine Flying Artillery."—The water is thrown with great force.

Machine for Making Paper Bags.

Francis Wolle, of Bethlehem, Pa., has taken measures to secure a patent for a useful machine to make paper bags. Pieces of paper, of any suitable size for various bags, are cut out of rolls into the required shape. the edges pasted, lapped, and formed into complete paper bags in very rapid order.

Ultramine.

We have received a sample of beautiful ultramarine from Augustus Scheller, St. Louis, Mo., who has lately returned from Germany, where he was admitted and taught the process for making artificial ultramarine, in the celebrated manufactory of Muremberg, Bavaria. The sample is a very fine one. He says the materials for making it are abundant and cheap in the United States, and that it can be made at less cost here than in Europe. This pigment is imported from Germany and France in considerable quantities and at pretty high prices, for lithographers, printers, paper stainers, and artists. The capital to engage in the business is not required to be large, and good profits, he believes, can be made. The manufacture of this beautiful azure paint is kept very secret, and has not yet found its way into England. Any person desirous of engaging in such a business will obtain more information about it by addressing Mr. Scheller, who is a practical chemist.

It is expected that the London Crystal Palace will come down in a short time. Lord Derby said, "it had answered its purpose and there was no further use for it." So think we. Let it come down; it was built for "The World's Fair," not a London flower garden.

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Scientific American

NEW-YORK, APRIL 24, 1852.

Russia Iron---Patents for Introducing Inventions.

The great aim and object of our Patent Laws is the good of the people, by encouraging improvements and discoveries in science and art. Our Patent Laws are based upon the principles of the English Code, but in one important particular they are very different,—this is the granting of patents to the introducers of useful improvements. A patent can be secured in England for the introduction of a new improvement; none but inventors are granted patents in our country, and each applicant must make oath, that he believes himself to be the original and first inventor, and that he does not know nor believe that the said invention was known or used, prior to his discovery. On more occasions than one, we have advocated the doctrine that it would be wise and good policy to grant patents for the introduction of new and useful improvements. We do not say that we would like to see the English system adopted here, but if application be made to Congress for a special Act to protect a new improvement introduced into our country, if it be an important one, which would be of far greater benefit to our people at the end of fourteen years, than if it never had been introduced, we say, Congress should be liberal and grant a patent. Our attention has been directed to this subject just now, by a Bill which has been brought into the Senate, for granting a special patent to a company in Pittsburg for the manufacture of Russia sheet-iron. The introducer of this manufacture cannot take oath that he or they are the inventors; the secret has been obtained from Russia, as we understand it. In England, and in our own country, innumerable but fruitless attempts have been made to manufacture Russia iron; thousands upon thousands of dollars have been spent in vain to make it, but all efforts to rival it have been abortive. The secret has at last found its way here, and there is a spirited company in Pittsburg who are willing to risk engaging in its manufacture, if Congress will protect them against home competition for fourteen years. The expense of engaging in the manufacture, to get up proper machinery and render their efforts successful, it is said, will cause an outlay of at least one hundred thousand dollars at the very first. As is well known to all iron manufacturers, a great deal of money will be expended at first without any returns; it is therefore both just and proper to protect those who have the spirit and means to engage in such an enterprise, for there is great risk in their so doing. It will not be a monopoly, for it will still have to meet the Russia iron in our markets, and unless the company can sell their sheet-iron for less than the Russian, they must be the losers. When a new manufacture is established in any country, after all the difficulties have been overcome, it is very easy for others to establish the same business; it is to protect this company from such unjust competition, that they desire a patent; and why should not one be granted? No one can give a good reason. It may be said, and we have been told the same story years ago, that a number of our engineers, such as Mr. Kirk, who have been in Russia, know how to make this iron; this may be all very true, but what good has their knowledge done the country? Has any one of them engaged in its manufacture? No; we still pay one million of dollars yearly to Russia for her iron, and unless some protection is afforded to a new company who are willing to risk so much to commence its manufacture, it is likely that we shall keep paying away this million of dollars, with accumulations, till Doomsday. And what harm can this patent do? Will it injure the interests of any person in our country? No; the patent is for the process of making the iron, and not the iron itself. No good reason can be adduced against the granting of this patent. We advocate every just measure which, in our opinion, will be a public benefit; and surely there is no man in his senses who can question the assertion that the successful manufacture of Russia sheet-iron in the United States at a lower price than the foreign, *would be a benefit to our whole people.*

No Extension of Patents—Reform the Patent Laws.

A writer in the New York Tribune has taken upon himself the task of writing down the Patent Laws. If these laws were not bad in many respects, he would have no fulcrum for his lever. He says some things which are true, other things which are not, and draws inferences totally at variance with justice and sound logic. He says the system of patent laws is an evil, and the only remedy, a total repeal of them. The only evil, however, which he points out—like all others who do not fully understand the subject they write about, is not an evil at all; this evil, he says, is the law which allows inventors to assign their patents. He says:—"The 8th Section of the 1st Article of the Constitution of the United States fully explains the policy its framers had in contemplation in authorizing the granting of Patents. To employ its own language, it was "to promote the progress of science and useful arts, by securing for *limited times* to authors and inventors the exclusive right to their respective writings and discoveries.

Under this provision of the Constitution, the first act was passed in 1790 by Congress, by virtue of which the Secretary of State, Secretary of War, and Attorney-General, were vested with the power to hear and determine all applications for Patents, and when a meritorious inventor presented himself, to grant him letters patent for a term not exceeding fourteen years. As this was the first patent law enacted by Congress after the adoption of the Constitution, it is important, in solving the problem I have proposed, to bear in mind that no assignment of a patent was provided or allowed by the provisions of this act, nor was any renewal of a patent contemplated.

The privilege intended by the framers of the Constitution to be granted to inventors was strictly a personal one; and secondly, that even in the earliest infancy of our government, when the arts scarcely had an existence among us at all, fourteen years' monopoly was considered as a sufficient compensation to the inventor for his discovery, and that after that period the benefits of such invention should inure to the public good, and be liable to appropriation by all persons, without limitation or restriction whatever. If such were the reasoning of our law-makers at that early day in our history, with how much greater force does it apply to the present condition of the country, if, in fact, the necessity for such encouragement and protection be not entirely abrogated."

This writer, who signs himself Anti-Monopoly, is certainly in error in reading the minds of the the framers of the Constitution, and he turns the very law of 1790 into an untruth, for it provided for assignments in the very first section in these words, "granting to his, her, or their heirs, administrators, or *assigns.*" It would have been well if Anti-Monopoly, before he attempted to *solve his problem*, had read the 1st and 4th sections of the act of 1790, or not to have falsified its plain language.

The act of 1793, Sec. 4, also says, it shall be lawful for any inventor, his executor, or administrator, to assign the title and interest in the said invention at any time, &c. This was but rendering the previous act of 1790 more plain, and developing its principles. It will therefore be seen how much credit can be attached to this gentleman for reading the minds of our early legislators on patent laws; also how much honesty he has exhibited in reference to the act of 1790, by asserting that it contained no provision for the assignment of a patent.

If our early legislators had made no provision for the assignment of patents; if they contemplated that the inventor and patentee should be allowed only to grant licences, then we certainly would have given them little credit for the law. It would be no benefit to the majority of inventors to grant them patents without allowing them the privilege of assigning them; and the country would be just as little benefitted as the inventor. Let us take a case:—James Watt, a poor mechanic, invented those great improvements on the steam engine which has made it the iron apostle of civilization. It was an expensive machine to build and he could not afford to do it himself. Mr. Bolton has plenty of money, is an enterprising man, and is solicited to engage in building the improved engine. He knows well that whenever it should prove successful—that is, whenever he should satisfactorily demonstrate its superiority, hundreds would be ready to enter into competition, and neither he nor the inventor would be remunerated for their genius, enterprise and money expended. Would he have engaged with poor Watt upon a full partnership agreement, which happily rewarded that immortal inventor, unless a share of the patent had been assigned to him? No, he would not. Well, it would be just the same with almost every other poor inventor if he were not able to assign his patent by law. Some assignees of patents, such as those of Woodworth's, Blanchard's, and Parker's—with some of their paid attornies, have been the means of doing more injury to the inventors of the United States than all the other assignees put together, and the writer in question speaks truly in respect to them. We believe that fourteen years is long enough for the term of a patent, and we, from a candid consideration of the subject, have come to the conclusion to advocate the repeal of the extension clause. We are convinced that it would be far better for the great majority of inventors, and for our country, if *no* patents were to be extended beyond the term of 14 years after 1853. We shall say more upon this subject next week, and now for a few words on the Repeal of the Patent Laws.

A section of the Constitution provides for the protection of inventors and authors; a repeal of the patent laws by Congress would be a violation of the spirit of the Constitution; the law of copyright is no more a just and right law than the law of patents. Our inventors have done the State as much service as our authors, and the cotton gin has certainly done more for our country than the writings of many of the most gifted of them. The great evil connected with our Patent Laws, is the expensiveness of our U. S. Circuit Courts. These should be reformed, and the old law fogying system of these courts, which we have borrowed from England, should be given to the winds. It is time we had a cheaper law system than we have; it is the expensiveness of law suits which has been the means of bringing discredit upon the patent principles of our constitution.

The Fire Annihilator Trial.

The Fire Annihilator Co. has furnished Fire Engine Company, No. 38, of this city, with six fire annihilators and a "go-cart," to run with them to fires to put them out, and give the annihilators a trial. This shows the Fire Annihilator Co. has some confidence in their apparatus, or otherwise they have a different object in view. On Saturday morning, the 10th inst., the brig Saml. P. Lord, lying between piers 13 and 14, E. R., was discovered to be on fire, and the said fire company was promptly on hand, with "go-cart" and annihilators; Engine Co. No. 5 was on the spot about the same time, but before it had its hose laid out and was ready to play, some of the members of No. 38 had boarded the vessel to extinguish the fiery foe with one of the tremendous annihilators. The brave boarders, seeing smoke issuing from the forecastle, and thinking that was the strong-hold of the fire, sprung in, down with the iron pin, which answers the purpose of a percussion hammer on a gun, and discharged the annihilator. Very soon afterwards the flames and smoke disappeared, and a triumph came near being decreed to the annihilator. When the brig was examined afterwards, it was discovered that all the fire had been in the hold, and No. 5 had got its pipe in there and put it out—there had been no fire in the forecastle. "A small piece of armor is a good thing, when put on the right place," and so it is with the annihilator—it is very good when applied to a small fire in the right way, and in the right place.

An Alum Spring.

A spring of water, having all the properties, it is said, of the celebrated Alum Springs, has been discovered two miles from Norfolk, Va.

Is Alcohol a Poison?

We have received a pamphlet against intemperance and coercive abstinence, by S. Buckingham, of Windsor, Broome Co., N. Y., and published by Angel, Engel & Hewitt, of this city. The object of it is to show that tippling, drunkenness, and all excess and immorality are evils, and so he holds coercive total abstinence. It is not in our place to discuss the moral of the question just now, although we might do so, for no man should be neutral on a question which concerns all; we will only allude to one point. He says alcohol is not a poison, and discusses this point. The editor of the New York Tribune takes the ground that alcohol is a poison, and this appears to be his fundamental reason for advocating the Maine Law. A correspondent in a recent Tribune, defines alcohol chemically, and says its composition is $C^4H^4+^2HO$, and that if one equivalent of water were taken away it would be *ether*. This is a mistake. Absolute alcohol contains no water, and is not to be found in commerce. Nobody drinks alcohol, it therefore appears to be a waste of words to discuss the question, "is alcohol a poison," and not one of those who have attempted it on either side, have stuck to the text, they all talk about wine, whiskey, &c., as if these drinks were alcohol.

New York Engineers Institute.

The following is the list of officers of the New York Engineers Institute for 1852:—

Henry Maxson, President; Jacob Williams, Vice President; Samuel Hamilton, Vice President; Dewitt C. Cregier, Secretary; John B. Moore Treasurer, William H. Lindsay, Corresponding Secretary.

[This list was handed to us without comment. We know not where the Institute meets, how often, what are its objects, nor what kind of business is transacted at the meetings. We should like to receive a brief, clear statement from some of the officers or members. It is well known to all how such institutions are regarded by us. We hope it will do much good, as assuredly it can, in spreading useful knowledge and promoting good-will among our engineers. Are these its objects?

Page's Electro-Magnetic Engine—A Misrepresentation.

We have received a letter from a correspondent in Ohio; he informs us that one lecturer, but two persons in conjunction, has been lecturing in that section of country on electricity, who seem, for what reason we know not, (except it is for the purpose of misrepresentation to sell some of their own schemes), to have a sore grudge, as all mountebanks and puffing speculators have, against the Scientific American. Their course of conduct was to leave the impression that we sometimes misrepresented things, hence they said we misstated the running expense of Prof. Page's engine. We know not who the wandering lecturers are; we pity the fate of such poor strolling players, wandering from barn to barn and from door to door, uttering such misrepresentations. We made no over-statements about Prof. Page's engine, which they say can be run for only eleven cents per day. Such persons may be trying to make people in the country purchase some miserable invention of their own; they have an immoral right to do so; they have also the same right to bear false witness against their neighbors, but no person prospers who is guilty of such conduct—this they will find out some day.

The Search for Sir John Franklin.

According to the latest arrangements, the squadron of vessels fitting for a searching expedition to the arctic regions, under the command of Captain Sir Edward Belcher, C. B., would leave Woolwich on the 10th inst., and be ready to leave Greenhithe on the 15th on their enterprising voyage.

Salt.

A medical writer in England is endeavoring to prove that salt was the "forbidden fruit," and that if it were no longer used by the human race, "their beauty bodily perfection, and power of mind," would exceed any era before known in the world.—[Echange.

[What an ignoramus he must be.

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LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING APRIL 13, 1852

DROP PRESSES—By Solomon Andrews, of Perth Amboy, N. J.: I do not claim constructing the hammer with a long stem, and making the same serve as guides; but I claim the hammer, or drop, provided at the same time with a stem, to serve as one of its guides, and one guide on each side, at or near its lower end, substantially as specified.

I also claim the manner of lifting and discharging the hammer or drop by means of the cogs in its stem, and the pinion operating therein, the fall of the hammer or drop bringing the said pinion into gear with the motive power, and its upward motion releasing or discharging it therefrom, at any given point, substantially as described.

HINGES—By Wm. Baker, of Utica, N. Y.: I do not claim as new, simply constructing the window blind hinge, with its screw plates so arranged as to be screwed to the back of the blind and the outside of the window casing; but I claim the bridge or inclined plane at the base of the pin, and the corresponding elongation of the eye, operating upon and in connection with the hook and catch attached and connected in the manner described—the whole forming a fastening and the mode of operating the same, the fastening taking hold of and pulling directly upon the window casing and the blind, and thus relieving the hinge, as described.

I claim the use of the bridge, or inclined plane at the base of the pin and the elongation of the eye, as described, for disengaging the blind fastening independent of its connection with my fastening, as described, and whether the fastening is connected with the hinge or not, the whole being constructed and arranged substantially as set forth.

MACHINES FOR TONGUING BOARDS—By Ransom Crosby & H. D. Edgcomb (assignors to Ransom Crosby, Jr.), of New York City: We claim the arrangement of two sets of stationary vibrating cutters for tonguing boards in separate stocks, substantially as described, with a space between them, for the escape of shavings, the sides of the stock being substantially parallel to the face of the board and each other, and the surfaces of their soles being substantially perpendicular thereto, the plane irons being inclined in the usual way, to the soles and backs of the stocks and the cutters, in their length, being substantially parallel to the sides thereof.

We are aware that two sets of cutters, in separate stocks, have been differently arranged, and for an analogous purpose, and we therefore do not claim them except in the arrangement and position, substantially as described.

WELDING STEEL, ETC., TO CAST-IRON.—By Mark Fisher & John H Norris, of Trenton, N. J.: Having described our improved apparatus for the manufacture of articles of cast-iron with steel, or wrought iron, welded thereto, we claim, first the metal box, or frame, for sustaining the steel in place and forming the cell below it; and, secondly, securing the steel in place, by means of the clamps in the manner described.

MILLS FOR CURVILINEAR SAWING—By James Hamilton, of New York City. Patented in England, June 1, 1848: I claim connecting the supporting roller, with the lever which forces it up against the under side of the log, by means of a joint and a segment slot and securing bolt, or the equivalent thereof, substantially as specified, so that the said roller can be inclined in any desired direction from a horizontal line, to suit the inclination of the underside of the log, and there secured, to give efficient support, as set forth.

I also claim extending the chucks for supporting the ends of curved logs below the head and tail blocks, so that the ends of such logs, in siding, may be supported below the surface of the head and tail blocks, to bring the upper curved part within the range of motion of the saw, substantially as specified, when this is combined with the middle supporting rail on which the lower part of the chuck rests, and by which they are supported during the operation, as set forth

And finally, in the method of indicating the bevels and keeping the logs to them as it is being sawed, I claim the index hand, whose axis of motion is in a line, or nearly so, with the axis of rotation of the log, substantially as specified, in combination with either of the side levers which have the same axis of motion as the index hand, and the adjustable or shifting inclined ways, substantially as specified, so that as the carriage advances with the log, the passage of the side lever (whether on one side or the other) on the inclined plane set to the required bevel, will shift the index hand and indicate the true bevel, to enable the operator to turn the log to correspond, as set forth

MACHINERY FOR MAKING CASKS—By James Hamilton, of New York City: I claim the sawing of two or more staves from one block, by means of two saws, which, in succession enter the same kerf, then, in succession, diverge in opposite directions, and finally converge and pass out of the same kerf, substantially as specified, the two saws being mounted substantially as specified, so that they can be moved, latterally, in opposite directions, in combination with the templates, or their equivalents, for giving the required lateral motions to the saws, as the block of wood is moved forward towards the saws, substantially as specified. In the machinery for boring holes for dowel pins, I claim the arrangement of the mandrels, carrying the bits on separate slides to admit of varying their distance apart, substantially as specified in combination with the reversible fence, or gauge, hung to a rock-shaft, mounted on a slide between the mandrels, and provided with the means of adjustment, substantially as specified, by means of which the bits can be set at pleasure to bore the holes at any desired distance apart, and on the two edges to correspond, the distance being gauged from the same end, with the view to economize timber, as specified.

In the machinery for jointing staves, I claim, in combination with the circular saw and the hinged carriage, which is governed by guides, to determine the form to be given, as described, the employment of the gauging apparatus, to determine the quantity of stuff to be cut off, and the gauge piece, with its two points, and made adjustable on the carriage, substantially as specified, by means of which combination the quantity of stuff to be cut away from each edge, is regulated, to prevent waste, and an equal width of the two ends secured, when cutting the second edge, as set forth.

In the machine for setting up the staves and driving on the hoops, I claim the spring arms, jointed to the weight or head on the sliding shaft, or the equivalents thereof, the said arms being formed with lips inside to support the hoop whilst setting up the staves, as specified, when the said arms are combined with the cam plate, or the equivalent thereof, for the purpose of liberating the arms from the hoop, to drive on the hoop, substantially as specified.

And, finally, in the machinery for turning the heads, I claim, in combination with the face chuck for receiving the head, and the clamping piece for clamping it against the chuck, substantially as specified, or the equivalents thereof, the employment of the jaws, operated by screws, or their equivalents, for the purpose of forcing together the different pieces constituting the head, preparatory to clamping them on the chuck, and turning the head, substantially as specified.

LOOMS FOR WEAVING FIGURED FABRICS—By B. H. Jenks, of Bridesburgh, Pa., and R. B. Goodyer, of Philadelphia, Pa. (assignors to B. H. Jenks): We claim, first, the method of moving both picker sticks of a loom, simultaneously, and at each beat of the lay, by the mechanism described, or the equivalent thereof, whereby a shuttle may be thrown from either side of the web, at each beat of the lay, and the momentum of the picker motion, at one side of the loom, is counterbalanced by that of the other picker motion at the opposite side of the loom, the mechanism operating in such manner that both the pickers are free to retreat to the outer ends of the shuttle boxes, the instant the shuttle is thrown, substantially as specified.

Second, the combination of the pattern wheel, arm, double armed lever, cross-head, and stop, operating substantially as set forth, to effect the shifting of the shuttle boxes, as set forth.

Third, the combination of the forked marches, reciprocating levers, pattern drum, and evenning pin, substantially as set forth, to effect the working of the heddles from the shed.

Fourth, the combination of the supplementary arms on the cam shaft, and pins upon the star wheel, or the equivalent thereof, operating substantially as set forth, to vary the number of changes which the heddle mechanism is susceptible.

Fifth, the combination of a fork and grid motion, for effecting the stopping of the loom, when the weft thread breaks, as the shuttle is moving towards one side of the loom, with the shifting plate lever, operating substantially as described, for preventing the loom from being stopped by the fork and grid motion, when the shuttle is thrown towards the side of the loom further therefrom.

Sixth, the combination of the long rock shaft on the lay, with its arms, toes, and levers, and of the chain lever and chain with the breast beam lever, or the equivalents thereof, operating substantially as decribed, to effect the stopping of the loom, when the shuttle is not in its proper shuttle box, at the time the lay is beating up, and also whenever the shuttle has not been ejected from its box, at the time the lay is completing its back stroke, as set forth.

REELING MACHINES—By Elias & Simeon Macy, of Laurel, Ind.: We do not claim to have invented a self-acting stop motion, to stop the machine, when a given length of yarn has been wound upon the reel, this having already been applied to machines similar to ours. But we claim constructing and arranging the stop motion, substantially as described, so that by adjusting it, the length of yarn wound upon the reel before it is stopped, may be regulated at pleasure, and all the skeins wound under the same adjustment will have the same length.

SEWING MACHINES—By Isaac M. Singer, of New York City: I claim, first, the cut-off friction pad, constructed and operating substantially in the manner and for the purpose set forth.

I also claim the construction and arrangement of the feeding apparatus, as described.

SEED PLANTERS—By B. T. Stowell & A. Marcellus of Waddam's Grove, Ill.: We claim, first, the application of the dibbles constructed and arranged as described, to the peripheries of the wheel, and operating in the manner set forth.

We also claim the peculiar arrangement for feeding the seed to the hills, consisting substantially of the pistons and tubes, regulated by the coiled springs, and bars, and operating as set forth.

INSTRUMENT FOR OPENING BOXES—By Geo. C. Taft, of Worcester, Mass.: I claim, in the described instrument for opening boxes, the tapering score, cut in both jaws, but smaller in the upper one, or so constructed that when both jaws are driven in between the side and lid of a box, the points of the jaws pass on each side of the nail, which will be griped in the score, so that as the jaw is raised to take up the lid, it will draw the nail out of the side and thus prevent the head of the nail from being drawn through the lid as it rises, while the jaw rests upon the side of the box, as described.

Second, I claim the tapering score, in combination with the peculiar construction and arrangement of the jaws, F and G, the latter being furnished with a recess, into which the former closes, in the manner and for the purposes set forth.

SEED PLANTERS—By Francis Vandoren, of Adrian, Mich.: I claim the hollow reversing tooth, constructed in the manner and for the purpose set forth.

OBLIQUE BUCKET PADDLE WHEEL—By Geo. S. Weeks, of Oswego, N. Y.: I do not claim placing the paddles in oblique positions to the axis of the wheel, as this has been done before: nor do I claim two sets of paddles inclining obliquely in opposite directions, and all at the same distance from the centre of the wheel: but I claim the arrangement of two series of adversely inclining oblique paddles, one within the other, in the construction of steamboat wheels, as set forth.

FEED APPARATUS OF PLANING MACHINES—By Joel Whitney, of Winchester, Mass.: I do not claim gearing the feed rollers with each other, by means of pairs of movable pinions connected to each other and to the feed rollers, by links, this having already been done; but I claim the arrangement by which the upper feed roll is allowed to yield to any inequalities in the board, and at the same time draw down upon the surface to which it has yielded, in proportion to the resistance to the cutting tools, that is, connecting the fixed shaft with the vertical sliding bearings of the upper feed roll, by means of the swinging inclined and vertical arms, the gears on the fixed shaft operating the lower feed roll, and also playing into the gears which move the upper feed roll—said latter gears having their bearings in the intersection or joint of the said arms, the arrangement being substantially as set forth.

RE-ISSUES.

WASHING APPARATUS—By James T. King, of Baltimore, Md. Patented originally October 21, 1851: I claim placing the rotary boiler for washing clothes immediately over the fire, and so combining with it a reservoir or top boiler, as that said rotary boiler shall form the lower half of the flue, whilst the said reservoir or boiler shall form the upper half of said flue, and from which the revolving boiler may be supplied with water, and thus greatly economise heat, as described.

I also claim, in combination with the rotary boiler and shielded stationary pipe, the top reservoir or boiler, for receiving the excess of steam from the boiler and heating the water therein, and this I claim whether said reservoir is divided by partitions or not—the whole being arranged in the manner described.

SELF-DETACHING BRAKES—By John Lehaye, of Reading, Pa. Patented originally April 10, 1847: I claim, in combination with the method of forcing the brakes against the wheels, by connecting the brakes on the mechanism which works them, with the bumpers or draw bars, substantially as specified. the method of releasing the brakes, notwithstanding the continuance of the forces by which they were applied, by the reversing action of the wheels on the brakes, to effect a disengagement of the pressing force, as described.

As one of the devices for applying the principle of my invention, I also claim connecting, by means of a detachable catch, or hook, substantially as specified, the bumper, or draw bar, with the lever, or its equivalent, which forces and holds the brake against the wheels, substantially as specified, so that notwithstanding the continuance of the backward pressure on the said bumper, or draw bar, the connection can be readily broken to relieve the brake, and thus leave the wheel free to run, as specified.

And I also claim making that part of the brake that acts directly on the wheel, separate from but so connected as to slide freely on the part which receives the action of the mechanism for forcing the brake against the wheel, as specified, by means of which, on reversing the motion of the wheel, the one part of the brake in contact therewith is made to slide, to give the required motion for effecting the disengagement, as specified.

ADDITIONAL IMPROVEMENT.

HORSE-SHOE NAIL MACHINE—By Marshall Burnett, of Boston, Mass. Patented Originally April 1, 1851: I now claim as an improvement, additional to the first named invention, a new arrangement of the parts of such combination by which I am enabled to operate them, by a continuous circular motion of the sustaining frame of the cams around one axis, instead of a reciprocating rectilinear motion, such as described, my new arrangement enabling me to operate with much greater rapidity and advantage than by that before exhibited. My said new arrangement consists in arranging the several cams on radial and horizontal shafts, in a rotary frame, in combination with arranging the working surface of the former on a circular arc, to conform to the sweep of the wheel, and with a variation only sufficient to form that side of the nail which bears directly against it—the whole being substantially as represented.

DESIGN.

COOKING STOVES—By J. J. Savage (assignor to Alex. Morrison & T. M. Tibbitts), of Troy, N. Y.

For the Scientific American.

Ventilation of Ships.

Since the passing and re-passing of ships, crowded with passengers, is likely to continue as long as there is vacant land on this continent, and the great loss of life on ship-board is fairly traceable to the bad air created by these crowds, every plausible remedy would seem to be worthy of notice. The most noxious air in ships (the carbonic acid gas) being heavier than the common atmosphere, and constantly increasing from the decomposition of decaying wood, cordage, and other vegetable substances, mixed with that which proceeds from digestion, the lungs, and generally from the human body, is confined in these tight vessels, and cannot escape, but through some mechanical action. The wind-sail is one of the contrivances for that purposes; but this cannot on all occasions be used, and is effectual only when the wind blows just enough but not in a gale, which would require closed hatches. I will now suggest two ways for taking off these heavy gases,—the volatile gases will escape by their own levity.

Make a pump of planks, planed smooth within, ten or twelve inches square, rig it with boxes and valves, as light as possible, diagonal or square boxes, woold them with sheepskins, or some softer fur, let the clapper or valve be lighter even than the boxes, even of pasteboard, lined with soft cotton flannel. The moving box may be worked in the usual way, with a long lift, the longer the better, as the smallest power will work the box. If the moving box be worked with seal-skin, or something as soft, a weight might be added to this box barely sufficient to overcome the friction of this fine woolding, to make it descend; then, instead of a rod to work it, a rope running over a pulley would draw, at every pull, a column of gas equal to the length of the pump. The passengers would be glad to take their turn at this easy work, for amusement.

In case of a serious leak, this pump might be used to great advantage, by substituting for the moving box a square bucket two or more feet long, with a small friction roller on each side, and a discharging valve on one side, kept closed also by a small roller till it reached the top of the pump, when it would open, and being hung by a hinge below, it would close on descending. This dipper would be hauled up in the same way by several men and by separate ropes, thus saving the great friction in common box pumps, which is the only objection to that useful machine.

My other proposition would be to have an opening of one foot or more in the deck, near the bows, communicating with a trough beside the keelson, pierced in its whole length with holes to admit the bad air, and rising somewhere near the stern to discharge it. The mouth near the bows might be covered by a hood to collect the wind, and if there were no wind, the headway of a steamer would create a draught.

The first plan I caused to be used about thirty-five years ago, in a distillery, to draw from the cistern the gas, to enable the workmen to go in and clean them. This pump could be worked by a small lathe held between the thumb and finger. FRANKLIN.

Blowers for Furnaces.

MESSRS. EDITORS—I would call your attention to some experiments which have recently been conducted in England by Mr. Archibald Slate, on the working of Blowing Engine, with small cylinders, and at a high velocity. It is stated that in a first experiment, with a cylinder 9 inches in diameter, and a one foot stroke, driven at the rate of 310 revolutions per minute, it discharged the air at the rate of 3½ lbs. pressure, through an orifice of 1 1-8 inches. It has been examined by the Institute of Civil Engineers, and approved, with the statement that thereby the cost of machinery for blowing a furnace will be reduced at least one-third.

Should the above principle prove correct, it must create an entire revolution in the present system of blowing as now carried on in the blast furnaces in this country, with their cumbrous and costly cylinders of from 4 to 6 feet in diameter, and slow motion of from 5 to 10 revolutions per minute. I should hope that you will not let this matter rest without looking into it with your usual ability, and giving your opinion of its principles as applicable to a practicable use; for, if proven to be correct, it will be of great benefit to the iron makers, in cheapening one of the most costly appendages to the blast furnaces.

ALEX. RALPH.

Adirondac Iron Works.

[We have made some experiments with a model blower, and the result has convinced us of the correctness of the experiments referred to. It is only, however, by the employment of a blower thus worked, for a considerable period, in a furnace, that we can attain true and reliable data on the question—the great one—economy.—ED.]

Mystery of the American Lakes.

Lake Erie is only 60 or 70 feet deep, but the bottom of Lake Ontario, which is 452 feet deep, is 230 feet below the tide-level of the ocean, or as low as most parts of the Gulf of St. Lawrence; and the bottoms of Lakes Huron, Michigan, and Superior, although their surface is so much higher, are all, from their vast depth, on a level with the bottom of Lake Ontario. Now, as the discharge through the river Detroit, after allowing for the full probable portion carried off by evaporation, does not appear by any means equal to the quantity of water which the three upper great lakes receive, it has been conjectured that a subterranean river may run from Lake Superior to Huron, and from Huron to Lake Ontario. This conjecture is by no means improbable, and accounts for the singular fact that salmon and herring are caught in all the lakes communicating with the St. Lawrence, but in no others. As the Falls of Niagara must have always existed, it would puzzle the naturalists to say how these fish got into the upper lakes without some such subterranean river; moreover, any periodical obstruction of this river would furnish a not improbable solution of the mysterious flux and reflux of the lakes.—[Welland Advocate, (C. W.)

[Are salmon and herring found in the lakes and rivers above the Falls of Niagara? If so, it affords strong grounds for supposing there is a subterranean communication between Ontario and the upper lakes, if not, we can see no grounds for such a conclusion.

In the Isle of Guernsey, the raising of parsnips for swine is a leading branch of farming. The root is almost exclusively used for pork making. A gentleman who once resided there, noticing the peculiarly fine flavor of the pork, inquired the reason of it, and was informed that it was owing to the hogs being fattened on raw parsnips.

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TO CORRESPONDENTS.

S. L., of Ill.—The best point of a conductor is to have the iron (if the rod be iron) gold or silver plated. Spratt has a patent on the fastener, but not the point. We have never known of a point being melted down.

L. A. L., of L., of Ohio—The stove blacking is excellent. The yellow metal is merely Muntz metal; Borden's Biscuit is for man. The preservation of bodies occupies more attention, perhaps, than it should. Earthen-ware coffins are of old date.

Geo. C., of ——.—In coming to the conclusion set forth in your letter, viz., "that two diamonds the size of the earth coming together with electric speed, would result in gas," you surely must have been contemplating the effects of an irresistible union between a male and female scold.

L. R. W., of Vt.—You would see by No. 30, Sci. Am., that we thought Vermont had the same laws as New York in respect to the attaching of property. No patentee can attach the property of any person in this State until a trial is had at law, and he gains the suit.

J. W. P., of Ga.—We should be sorry if the public should read the remarks spoken of with an unfavorable bias. Experiments with barometers have revealed the fact, that the pressure is lower in the antartic than the arctic regions. The oscillations of the barometer are just as correct in a house as in the atmosphere. The maximum of pressure is greater just outside than inside the tropics, but less at the poles.

D. R., of Galt, C. W.—We do not know where the copper rolling mills are situated.

E. A. J., of Me.—Your invention is not new; a patent was granted, in 1844, to E. A. Lester, of Boston, Mass., for the same invention.

D. S., of Va.—We have minutely examined the sketch of your improved kiln, and think it novel, sufficiently so to warrant an application for a patent.

D. A. S., of Ohio.—We thank you for the information contained in yours of the 7th inst. Engravings of the pump, well prepared, would cost $15. We mean the two views complete. We could not publish them in the Sci. Am., as the invention is too common and well known.

W. A. S., of N. Y.—We have learned from parties familiar with the Eastman Wheel, that it is a middling class operator, less effective than those better known.

H. F., of Mich.—Such a burglar's lock has been known for a long time, and is not patentable. The onical tubes, as arranged, is something novel, and we judge from your sketch that is patentable; its advantages should be fully explained.

A. C., of Ct.—Your last just came to hand while we were going to press.

D. D. A., of Mass.—We have yours of the 15th instant, covering cash in full for patent fees, The business we shall urge forward with all possible dispatch.

R. A. G., of N.—Yours on "strikes" has been received; we shall give it attention.

J. C., of Savannah—The laws of the United States do not provsde for the punishment of such cases as you speak of. When a person stamps the word patent, patentee, or any word calculated to deceive the public into the belief that the article is patented, when it is not, the penalty for such offence is not less than $100, and all patented articles must be so stamped with the date, under a like penalty.

Money received on account of Patent Office business or the week ending April 17:

T. H. D., of N. H., $50; E. N., of N. H., $15; D. G., of Vt, $20; S. R. & Co., of N. Y., $82,25; D. D. A, of Mass., $50; G. S., of N. Y., $30; S. & M., of N. J., $30; E. & Co., of N. Y., $38; J. H. B., of O., $30; D. R. R., of N. Y., $12; A. Van N., of N. Y., $35; M. H. F., of Ct., $30; D. & B.. of N. Y., $65; A. C., of N. Y., $55; D. B., of N. Y., $32.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending April 17:

W. T. R., of Ct.; E. N., of N. H.; S. R. & Co., of N. Y.; A. C., of N. Y.; A. Van N., of N. Y.; M. H. F., of Ct.; D. & B., of N. Y.; D. B., of N. Y.

Literary Papers.

We have entered into an arrangement with the publishers of the "American Model Courier," of Philadelphia, and the "American Union," of Boston, which will enable us to furnish either of the two, with the Scientific American, for $3 per annum. They are literary journals of the first order, and are widely circulated in all sections of the country.

☞ Parties cannot be allowed an addition of one of the Literary papers, as above, by remitting a single dollar after paying their year's subscription to the Scientific American; neither can they be permitted to avail themselves of the above conditions for a less term than a full year, and on the precise terms advertised. Money received under other circumstances will be credited in continuance of the Scientific American.

An Important Paragraph.

Whenever our friends order numbers they have missed—we always send them if we have them on hand. We make this statement to save time and trouble, to which we are subjected in replying when the numbers called for cannot be supplied.

The Post Office Laws do not allow publishers to enclose receipts; when the paper comes regular subscribers may consider their money as received.

Subscribers ordering books or pamphlets are particularly requested to remit sufficient to pay postage.

Inventors and their Models.

There are several small cases remaining at the various Express offices in this city, marked to our address, on which the expenses have not been prepaid. We would respectfully inform inventors that the Express charges on ten or a dozen cases daily, from every part of the Union, amounts to no inconsiderable expense, and that we shall, in future refuse to receive packages unless the Express fees have been paid, or the expense otherwise provided for. Parties who reside at a remote distance from the city, and cannot arrange for pre-paying the Express charges, should enclose a sufficient amount in a letter and send by mail.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office;—stating the name of the patentee, and enclosing one dollar as fee for copying

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Persons writing us without signing their names to the communication, are considered as not acting in good faith, or as mistaking the rules which govern all newspaper establishments, and are therefore not attended to.

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☞ All advertisements must be paid for before inserting.

American and Foreign Patent Agency

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post.paid) MUNN & CO.
At this Office.

BALLOONS—From 1 to 1000 lbs. ascending power, made to order and warranted perfect. Also for sale, Wise's History and Practice of Aeronautics. No library is complete without this work: "It is the best book ever published on this subject,"—Scientific Am. Octavo, over 300 pages; 13 plates; price $2, delivered postage free to any part of the U. S. All letters (post-paid) addressed Lancaster, Pa., promptly attended to. JOHN WISE, Aeronaut. 32 5*

PATENT REVOLVING MITRE BOX—Patented Nov., 1851. This machine is constructed as to be arranged instantly, to cut the mitres for any obtuse or acute angle, as well as square joints, and warranted to make perfect joints. The whole or part of the right of said machine for sale. For further particulars inquire of MATTHEW SPEAR, Bowdoinham, Me., or of J. M. Kelly, Richmond, Me. 1*

MECHANICAL DRAWINGS—J. H. BAILEY draughtsmen, agent for the sale of patent rights inventions, machinery, &c.; office No. 5 Tryon Row, Harlem Railroad Buildings, opposite City Hall. 31 2*

AMERICAN RIFLE—John R. Chapman's work on the American Rifle, bound in muslin, price $1,25, can be obtained of D. Appleton & Co., 200 Broadway, New York, through the agency of any country bookseller. The Treatise comprises the theory and practice of Rifle Making and Rifle Shooting, and is intended to benefit the enquiring mechanic and marksman. 31 2*

FOR SALE—A new and complete set of Counter Twist Speeder Patterns, the owner having no use for them, will sell them very low. For particulars apply to GEORGE POE, Ellicott's Mills, Maryland. 31 2*

STEAM ENGINE FOR SALE—One of Hoe's upright square Engines for sale, of about five horse-power, price $150: can be seen running daily. Apply at 47 Dey st., N. Y., in the rear, to C. H. ANDRUS. 31 2*

STATE AGRICULTURAL WAREHOUSE—LONGETT & GRIFFING, dealers in Agricultural Implements, No. 25 Cliff st., (near Fulton), New York. Field and Garden Seeds. Guano and other Fertilizers. 29 4*

MORTISING MACHINE.—Dear Sirs: I received the Portable Mortising Machine about 3 weeks ago; I have used it, and am very well pleased with it. It is the best plan of a machine of the kind I have ever seen. W. R. McFARLAND.
Nashville, Tenn., 1851.

This machine is simple, durable, and effective, and is boxed and shipped for the low sum of $20.
MUNN & CO.

STEAM ENGINES AND BOILERS—The patentee is now ready to supply orders for steam engines with Ayer's Patent Improved Boiler of any size required. These boilers occupy but little space, can be set up without brick work, and will make more steam with the same fuel than any other boiler.s A self-acting feeder furnishes a constant supply of water, preventing thereby, in a great degree, the danger of explosion. Where doubts are entertained as to the superiority of these boilers, I will be content to receive for the right one-fourth of the value of the fuel saved by their use. Portable engines furnished to order. E. AYER, Patentee, Norwich, Conn. 26 7*

JOHN W. GRIFFITHS—Ship Builder and Marine Architect, 658 Fourth st., N. Y., furnishes models and draughts of all description of vessels, with the computation of stability, capacity, displacement, and necessary amount of impulsion. Propelling power located and proportionably adapted to the form of the vessel, whether sailing or steaming. Mr. G. also superintends the construction of vessels, and may be consulted upon all subjects pertaining to the various departments of the science or practice of ship building. Draughts forwarded by letter to all parts of the world, and to any desired scale; all letters must be post-paid. 27 13*

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting.
27tf P. A. LEONARD.

A. B. ELY, Counsellor at Law, 46 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 13tf

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CLOCKS FOR CHURCHES, PUBLIC BUILDINGS, RAILROAD STATIONS, &c., and REGULATORS FOR JEWELLERS.—The undersigned having succeeded in counteracting entirely the influence of the changes of the temperature upon the pendulum, and introduced other important improvements in the construction of clocks, are prepared to furnish an article, superior to any made in the United States, (the highest grade warranted to vary less than two minutes in twelve months). Glass dials for illumination furnished. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, Long Island, N. Y.

"At the Oakland Works of Sherry & Byram there are made some of the finest clocks in the world."—[Scientific American.

"Mr. Byram is a rare mechanical genius." [Jour. of Commerce. 26tf.

THE SUBSCRIBER is now finishing four 14 horse engines, with boiler and apparatus all complete—price $1200 each. Several 6 horse engines extremely low: also, several of smaller capacity, completely; also, several power plainers, now finishing. Galvanized chain for water elevators, and all fixtures—price low—wholesale and retail. Orders, post-paid, will receive prompt attention. AARON KILBORN.
No. 4 Howard st., New Haven, Ct. 23 10*

TO LUMBERMEN—E. H. & S. E. PARSONS, inventors of the Self-straining and Self-ranging Saw Frames, for saw-mills, combining the advantages of both the muley and gate mills and superior to either, reducing the wear and tear to about one-fourth. The saw will bear as much feed, and is as easily kept in order, and is warranted to saw the same amount of lumber with one-fourth less power. They may be seen in successful operation at the Empire Works, Binghampton, Broome Co., N. Y., where they are manufactured, and at Frankfort, Ky., and Cass, Tenn. For further particular address (post-paid) Wilkesbarre, Pa. 29 5*

DRAUGHT BOARDS, PATENT—23 by 29 inches, various scales; also Paper Fasteners, all for quick work, superior to fig. 3 in Sci. Am., No. 2 Vol. 3. $10, with T Rule. Sent by Express, Direct (post-paid) to H. W. CHAMBERLIN, Pittsfield, Mass. 29 4*

A CARD—The undersigned beg leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers, and manufacturers of all kinds of instruments, to our new and extensive assortment of fine English (Stubbs) and Swiss Files and Tools; also our imported and own manufactured Mathematical Drawing Instruments of Swiss and English styles—which we offer at very reasonable prices. Orders for any kind of instruments will be promptly executed by SIBENMANN & QUARTIER, Importers of Watchmakers' and Jewellers' Files and Tools and manufacturers of Mathematical Instruents, 15 John st. 23 13*

IRON FOUNDERS MATERIALS—viz.: fine pulverized Sea Coal, Anthracite and Charcoal, Black Lead and Soapstone Facings. Iron and brass moulding sand; Core sand and flour; English Fire Bricks for cupolas, &c. Fire Sand and Clay—for sale by G. O. ROBERTSON Liberty place, (near the Post Office) N. Y. 23 10*

TRACY & FALES, RAILROAD CAR MANUFACTORY—Grove Works, Hartford, Conn. Passenger, freight, and all other descriptions of railroad cars and locomotive tenders made to order promptly. 26tf

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POST'S PATENT SLIDING DOOR FRONTS—for stores and Public Buildings; a new, cheap, and simple fixture for securing store fronts, which renders them fire and burglar proof, has been invented and patented by the subscriber, who is now prepared to sell rights. Messrs. Quarterman and Son, 114 John st, N. Y., are general agents. Address, (post-paid) Wm. POST, Architect, Flushing, L. I. 25tf

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NEW HAVEN MANUFACTURING COMpany, Tool Builders, New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25,000 worth of Machinist's Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts, to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Co are also manufacturing steam engines. All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No. 12 Platt st., New York, S. C. HILLS, Agent N. H Man'g Co. 25tf

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PAINTS, &c. &c.—American Atomic Drier, Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
23tf Painters and Chemists.

BEARDSLEE'S PATENT PLANING MAchine, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. F. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway; Albany. GEO. W. BEARDSLEE. 23tf

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MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 26 tf

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WOOD'S IMPROVED SHINGLE MACHINE—Patented January 8th 1850, is without doubt the most valuable improvement ever made in this branch of labor-saving machinery. It has been thoroughly tested upon all kinds of timber and so great was the favor with which this machine was held at the last Fair of the American Institute that an unbought premium was awarded to it in preference to any other on exhibition. Persons wishing for rights can address (post-paid) JAMES D. JOHNSON, Bridgeport, Ct.; or WM. WOOD, Westport; Ct., All letters will be promptly attended to. 22tf

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THE EXCELSIOR Sand and Emery Papers. are offered as new and superior articles, being manufactured by an improved process; the paper is made from the best Manilla hemp, and consequently is very strong and lasting; the grit is of the sharpest and most enduring kind, and is firmly attached to the paper with a remarkable evenness of surface; their freeness from ridges, stripes, and other imperfections, recommend them to the notice of consumers These papers have been used by many of our first mechanics, and are pronounced superior to all others. Every sheet is stamped WM. B. PARSONS, and warranted. Samples furnished at the office, No. 187 Water street, New York. WM. B. PARSONS,
14 6m* Sole Proprietor.

P. W. GATES'S PATENT DIES FOR CUTTING SCREWS—Patented May 8th, 1847.—This Die cuts Screws of any size, V or square thread, by once passing over the Iron. Also, Lead Screws for Lathes, Hoisting Screws, &c. All orders for Dies and Taps, with or without machines, will meet with prompt attention by addressing P. W. Gates, or Gates & McKnight, Chicago; Marshall, Bement & Colby, Philadelphia; Woodburn, Light & Co., Worcester, Mass. References—All the principal machine shops in New York, Philadelphia, and Boston. 13 6m*

CHARLES F. MANN, FULTON IRON WORKS, Below the Troy and Greenbush Railroad Depot, Troy, N. Y.—The subscriber builds Steam Engines and Boilers of various patterns and sizes, from three horse power upward; also, his Portable Steam Engine and Boiler combined, occupying little space, economical in fuel, safe, and easily managed; Double Action Lift and Force Pumps; Fixtures and Apparatus for Steam or Water; Tools for Machine Shops; Shafting and Pulleys for Factories. Brass Castings and Machinery made to order at short notice. Steam engines furnished cheaper than can be had elsewhere, of the same quality. 30tf

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N. G. NORCROSS'S ROTARY PLANING MACHINE UNEQUALLED—This machine took the first medals awarded to Rotary Planers at the Fair in Boston and at the American Institute, in the Fall of 1850. The Circuit Court. in the Eastern Circuit, held at Boston on the 24th Feb., before his honor Judge Sprague, decided, after a long and tedious litigation of two years, that the Norcross Machine does not infringe the Woodworth Patent; this was on a motion for a permanent injunction, which was refused without ordering a jury trial. Rights to use this patent are for sale by N. G. NORCROSS, Lowell, Mass. 29 8*

IMPORTANT TO IRON FOUNDRIES—The Galvanic Alloy Manufacturing Co., Nos. 401, 403, and 405 Cherry st., N. Y., will furnish the Aerostatic Fan Blower at $55, and with patent fitting at $65, that produce sufficient blast for the longest cupola, melting 3 and 4 tons of iron per hour; taking less than one half the power of those now in use, that cost from $80 to $100. The wings, being only about an inch in width (planned upon entirely new and mathematical principles), produce double the blast with half the power of other blowers. Warranted in all cases, or they may be returned and the money refunded. 29tf.

MANUFACTURE OF PATENT WIRE Ropes and Cables—for inclined planes, suspension bridges, standing rigging, mines cranes, derick, tillers &c.; by JOHN A. ROEBLING; Civil Engineer—Trenton N. J. 47 1y*

PATENT CAR AXLE LATHE—I am now manufacturing, and have for sale, the above lathes; weight, 5,500 pounds, price $600. I will furnish a man with each lathe, who will turn and finish axles for 50 cents each, if desired. I have also for sale my patent engine screw lathe, for turning and chucking tapers, cutting screws and all kinds of common job work, weight 1500 lbs., price $225. The above lathe warranted to give good satisfaction. J. D. WHITE, Hartford, Ct. 7 6m*

LOGAN VAIL & CO., No. 9 Gold street, New York, agents for George Vail & Co., Speedwell Iron Works, have constantly on hand Saw Mill and Grist Mill Irons, Press Screws, Bogardus' Horse-Powers, and will take orders of Machinery of any kind, of iron and brass; Portable, Saw-mills and Steam Engines, Saw Gummers of approved and cheap kind, &c. Gearing, Shafting, large and small, cast or of wrought iron. 11 1y

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HAWKIN'S Stave Dressing Machine—Is now in operation in the city of Milwaukie, Wis., and will dress from 6 to 8000 staves per day, ready for the truss hoops, and at one operation. Rights for States and Counties, and also machines, for sale, apply to WM. HAWKINS, Patentee, Milwaukie, Wis.
15 20*

1852 TO 1856.----WOODWORTH'S PAtent Planing, Tongueing, Grooving, Rabeting, and Moulding Machines.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $760. For rights in the unoccupied towns and counties of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 26tf

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SCIENTIFIC MUSEUM.

Agricultural Science.

BENEFITS OF DRAINING.—Prof. Norton thus describes the benefits of draining wet lands, an operation too much neglected among us:—"When a drain is made and covered, (for I always mean here covered drains), the water which falls upon the ground does not remain to stagnate, and does not run away over the surface, washing off the best of the soil, but sinks gradually down, yielding to the plants any fertilizing matter which it may contain, and often washing out some hurtful substances; as it descends, air, and consequently warmth, follow it. Under these new influences the proper decompositions and preparation of compounds fit for the sustenance of plants go on, the soil is warm and sufficiently dry, and plants flourish which formerly never would grow on it to perfection, if at all. It is a curious fact, too, that such soils resist drought better than before. The reason is, that the plants are able to send their roots much further down then in search of food, without ever finding anything hurtful. Every part being penetrated with air, and consequently dryer and lighter, these soils do not bake in summer, but remain mellow and porous. Such effects cannot, in their full extent, be looked for in a stiff clay, during the first season; the change must be gradual, but its sure."

HOW TO CULTIVATE BEANS.—Beans for early table use should be planted as soon as there is security from the frost. Make large hills—say two feet over and one foot deep, and fill in with good manure to within three inches of the top—stamping in the manure as compactly as possible, and cover the whole with loam. Around the edge of the hill insert your beans, by making holes with a dibble, and cover them carefully. The beans should be within four inches of each other, and occupy the circumference of the circle formed by the edge of the hill. Immediately in contact with each bean insert a rod six feet long. Crowd it firmly into the soil, and bring the bushy tops of all the sticks together at a point exactly over the centre of the hill, and secure them closely with a stout string. If you prefer it, the hills may be made larger, indeed of any dimensions from two to six feet, if you can afford manure and room. When large hills are made they have a very pleasing effect, and appear like cones of verdure rising from the soil.—[Ohio Farmer.

Bone Dust for Crops.

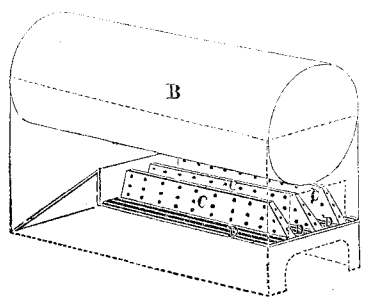
Among the fertilizers in use, bone-dust or bones dissolved in sulphuric acid, hold a high place. Bones which have heretofore been suffered to bleach in the weather, may be preserved and crushed, or ground (if dry,) and applied to the land with beneficial and lasting effects. It is no uncommon thing in England, to see a double crop of turnips—the effect of the use of bone-dust—even twelve years after its application. The bones can be boiled in lye until they fall to a powder—or they may be dissolved in sulphuric acid, (oil of vitriol), which can be easily obtained, Dr. Lee says, 'for two and a half and three cents per pound." The process is thus described by Prof. Norton:—"To every one hundred pounds of bones, fifty or sixty of acid are added, which must be diluted with two or three times its bulk of water. If bone-dust is used, twenty-five to forty-five pounds of acid to the one hundred of dust, will be sufficient. The bones should be placed in a tub, and a portion of the diluted acid poured upon them. After standing a day, another portion of the acid may be poured on, and finally the third day, if not dissolved, the remainder may be applied." Ashes, loam, or charcoal-powder may then be mixed with the mass, when it may be conveniently applied to the land.

G. B. Browne, in an article published in the Farm Journal, (Lancaster, Pa.,) speaking of the use of bone-dust as applicable to Indian corn crops, thus describes the method of preparing and using it:—

"If we dissolve the bone after it is burnt, we afford to the plant phosphate of lime in the most divided state, and at the cheapest rate possible. However, it is not necessary that we should use sufficient acid to render the whole mass liquid, and unless the dose applied be very small, I would prefer the use of about 20 lbs. of acid to 100 lbs. of bones (before burnt). If the acid is diluted with four times its own weight of water, by the addition of saw-dust, it can be dried so as to be easily handled, and the moisture of the ground will sufficiently dissolve it. Two hundred pounds per acre of bones, thus prepared, will form a sufficient dose, if applied in the hill. It should be put on at the planting."

On Boilers.—No. 20.

Fig. 39.



MORSE'S AIR DISTRIBUTOR.—Figure 39 is a perspective view, (part in section), of the air distributor for the furnaces of steam boilers, invented by L. Morse & Bros., patented in 1846 and re-issued in 1848. The object of it is to burn saw-dust and spent tan bark under steam boilers. A is the outside plates; C C are hollow perforated chambers placed about 8 inches apart on the grate bearers, and the same length of the grate bars. These are the air distributors. They are about one foot in height and are of a conical form from the base to the top; a vertical transverse section would be a cone. These air-distributors are made of iron one inch thick. The inside measure of each is five inches at the base, tapering upwards to two inches at the top. The perforations are 5-8 and 3-4 of an inch in diameter, and placed at three inches apart; D D are grate bars to fill the space between the distributors; B B are two horizontal boilers.

This is an improved attachment for steam boilers, which for tanneries, saw-mills, &c., is of great importance and value. Its use is now, we believe, becoming very extensive, as it should be, for in many instances it is used to burn up wet tan bark, which otherwise would be of no value, but be trodden under foot. It therefore allows the tan bark to be employed as fuel, thus saving a great amount of money to every tannery that employs it. In saw-mills its use is equally advantageous, and for dye works where the dye woods are thrown aside after being boiled, as useless, it would be of as great importance as in tanneries. On sugar plantations it would be excellent for burning bagasse, and it might obviate the necessity of drying this material before using it for fuel. If the bagasse were cut up in a mill it would be in a most excellent state, we think, to be used under a boiler which had this air-distributor attached.

L. Morse & Bros. reside at Athol, Mass.; Lyman A. Spalding, of Lockport, N. Y., and J. A. Campbell, of Buffalo, N. Y., are assignees for New York State, and the latter gentleman owns the rights for Pennsylvania, Maryland, and Delaware. They can give all the needful information about the price, &c.

Remarkable Cave.

A remarkable cave, recently discovered in Berkshire County, Mass., has been explored. It is situated about a mile south of the village of North Adams. A narrow and difficult passage, about eight feet in length, leads to a room large enough to contain six or eight persons. Northward, a small horizontal avenue, ten or twelve feet long, leads to another room, considerably larger than the first.—From this, by descending twenty perpendicular feet, another room is entered, thirty feet long by an average breadth of about twenty feet and twenty feet high. Beyond this, and lower down are similar apartments, answering to bedrooms, pantries, &c. Farther on no one has explored. The walls of the cavern are composed of limestone, belonging to the vast ledge of which Saddle Mountain is composed.

Unique Piece of Jewelry.

A lady of Albany, N. Y., recently received from a relative in California, in a letter, a gold watch and two gold chains. The package did not weigh an ounce and a half. The watch is a perfect gem. It is a Geneva lever, full jewelled, is not much larger than a dime, and keeps admirable time. One of the chains was of gold and agate, very beautiful, and the other was of the finest California gold, and about eighteen inches in length. Such a letter is worth the postage, at least.

There must be some handy mechanics in California.

Economy of Water and Steam Power.

The Annual Report of the Water Committee of Philadelphia presents some matter for reflection in respect to the economy of water and steam power. At the Fairmount Water Works, a turbine wheel had been substituted for an old breast wheel with the most happy results. The U. S. Gazette says, "the wheel will enable the water works to gain some six hours per day in time, and about 512,183 ale gallons in quantity, over any heretofore used. The importance of the success of this wheel consists in the power of similar ones, whenever added, to increase the efficiency of the works, without erecting additional buildings or resorting to steam power. By adapting such wheels to the present pumps, in lieu of those now used, the ability to raise at least 4,166,281 gallons more water than can now be raised, could be obtained, and by substituting stronger pumps, it is believed an addition of 6,000,000 gallons per day could be gained. The change, if made, would defer for many years the necessity of a resort to steam power; and the advantages of this may be appreciated by comparing the cost of steam and water power for the purpose of pumping. The difference in the expense of the two methods is exhibited by the following statistics. The total cost of running the eight wheels and pumps at Fairmount, in 1850, was as follows: For wages of workmen, tallow, oil, packing yarn, and fuel for heating the mill-house, $2,594 91 per annum equal to $7 10 8-10 per day. For repairs to the wheels and pumps during the year, $216 47—equal to 59 2-10 cents per day; making a total of $2,811 18—equal to $7 70 cts. per day. For this sum an average of 4,785,338 ale gallons per diem were pumped by the eight wheels and pumps, equivalent to a cost of about $1 61 per million gallons, raised each day.

From information furnished by the Register of the Spring Garden and Northern Liberties Water Works, the cost of pumping by steam power at these works, in 1850, was shown to be as follows:—For coal, wages of workmen, tallow, oil, yarn, &c., $16,644 per annum; equal to $45 60 per day; for repairs to engines and pumps during the year, $5,127 46; equal to 15 06 per day; making a total cost of $21,771 46; equal to $60 66 per diem. For this sum an average of $3,231,254 gallons per day were pumped by three engines and pumps, being about equivalent to an expense of $18 77 per million gallons per day."

By these figures it appears that the water furnished by steam power, costs about eighteen times as much as that furnished by water power, and this so near the coal regions. There surely must have been extraordinary little regard paid to economy in the use of the steam power, or the expenses would not be so much. There can be no doubt, however, in almost every case, of the superior economy of water over that of steam power.

Atomic Number and Equivalent in Chemistry.

In chemical language an equivalent simply expresses the relative proportion in which one body unites with another—thus one equivalent of hydrogen, uniting with one of oxygen, gives rise to one equivalent or atom of water. Now supposing these proportions to be grains, it will require exactly one grain of hydrogen to neutralize eight of oxygen; the weight of the product of their union will be the sum of their weights—9. Thus 9 represents one atom of water, and whether it be considered as grains or otherwise, so that the relative proportion between its constituents be as 1 to 8—no matter how large or how small the quantity—it will still be a single atom.—Again, an atom of lime is indicated by 28. To convert it into an atom of hydrate, or, as it is more commonly called, slacked lime, one atom of water or 9 would be requisite—the sum of these numbers (is 28+9=37) is the atomic weight of the new body. We see by this, that not only are the simple elements governed by certain unvarying laws of proportion, but that the complex bodies resulting from the union of these elementary agents, are also subject to the same subtle influences.

[The above is from the Philadelphia Ledger, by a correspondent. It shows the importance of being acquainted with the language of science. The basis of atomic weight is hydrogen 1; oxygen is 8. Youman's Chemical Chart is very excellent for showing the combining equivalents of different bodies.

Cultivation of the Vine in Ohio.

We learn by the Western Horticultural Review, that there are at least 1,200 acres of vineyards around Cincinnati, giving employment to no less than 600 efficient laborers, at an annual cost of $120,000, and producing in moderately favorable seasons, 240,000 gallons of wine. A considerable portion of this wine falls into the hands of wine-coopers, and is converted into sparkling wine or champaigne. Most of those engaged in the culture of the vine have families to support. It is calculated that the wine interest in Hamilton County affords subsistance directly and indirectly to 2,000 industrious and sober people,—a drunken vine-dresser is not to be met with. It seems that Ohio is yet destined to be as famous for her wine as she is for her pork business.

Exploration of the Sources of the Red River.

Capt. R. B. Marcy, of the U. S. Army, passed through Little Rock, a few days ago, on his way to make a survey of the country bordering on the Red River, Cashe Creek or Big Wichita to its sources. In connection with this duty, he is required to ascertain the number and habits of the Indian tribes who occupy it, to furnish a geographical sketch of his route, and such other information as will enlighten the government in relation to a territory now wholly unknown.

LITERARY NOTICES.

GODEY'S LADY'S BOOK—The May number of this popular and deserving serial, contains 120 pages of letterpress, and is superbly illustrated: "January and May" is a fine picture, by Steel. Our readers will find the book upon the counter of Messrs. H. Long. & Bro., 43 Ann st.

SARTAIN'S MAGAZINE—For May, has 30 original articles and 16 embellishments. "The Forgotten Strain," and "The Corsair's Bride." are beautiful pictures. Hirst, Leland, Bissell, Caroline Cheseboro, Alice Carey, and Elmore Simons, are among the contributors. Messrs. H. Long & Bro. 43 Ann st., are New York agents for its sale.

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